

ARYATARANGINI

The Saga of The Indo-Aryans

A. KALYANARAMAN

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To

**JAGADGURU SRI SANKARACHARYA OF
KANCHI KAMAKOTI PEETAM**

**प्रोता जयता नरेन्द्रो वः शर्म यच्छतु ।
उग्रा वः सन्तु बाहवोऽनाधृष्या यथाऽसथ**

**Go forward and conquer, Ye Heroes !
May God protect and cherish you !
Valiant be your arms, such that you
May ever remain uninjured.**

— *Rig Veda*

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FOREWORD

Sri A. Kalyanaraman has spent his period of retirement on the study of the history of Indo-Aryans. His work is learned and brings together a vast field of unfamiliar material. I am not an authority in this field of study and therefore I am not competent to give any opinion on it. The suggestions which he has made require careful thought.

S. Radhakrishnan

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P R E F A C E

I have sub-titled this book *The Saga of the Indo-Aryans*, because it deals primarily with the achievements and the peregrinations of the Aryan peoples at the dawn of history and long before. I have portrayed the Indo-Aryans as a people in their first youth, almost perpetually on the march, both to the east and to the west of their original homeland, the Sapta Sindhu, situated in the vicinity of north-west India. I have traced the outlines of their onward progress in either direction : to the west, up to the Mediterranean littoral and to Egypt; to the east, right down to the New World, which they probably 'discovered' many centuries before Columbus. Incidentally I have argued that the Vedas are a few thousand years older than what some Indologists would concede; that the so-called Indus Valley Civilisation is post-Vedic in chronology and Hindu in character; that the Indo-Aryans were the cultural benefactors of Sumeria and Chaldea; and that the Land of Punt, so dearly sacred to the ancient Egyptians, was no other than the Paktya of our ancient writers; and that the Phoenicians were none else than 'vratya' Aryans, decried as niggardly Panis in the Vedas, and probably hustled out of Sapta Sindhu by the orthodox 'sacrificers'. To the east, I have traced the almost riotously unimpeded progress of the Indo-Aryans into Tibet, Burma and South-East Asia, and outlined their glorious two-thousand-year-old history and achievements in these areas. I have also adduced some unmistakable indications of Aryan movement into Polynesia and the New World in the dim twilight of early history. I have all through endeavoured to portray the story of Aryan progress in all its strong cultural overtones, to show how it was accompanied by such political and social advancement and such phenomenal enlightenment and religious uplift, that their broad outlines have been delineated all too inadequately in these writings.

As Benedetto Croce once observed, "The historian must have a point of view and an intimate personal conviction. The historical work of art cannot be achieved, save by means of this *point of view*. If the historian is to escape from the inevitable necessity of taking a side, he must become a political and scientific eunuch and history is not the business of eunuchs". (Croce - 'Aesthetic'). All historical writing must, therefore, conform to a thesis. Briefly put, my thesis is that the Aryans are as native to Bharat as the Himalayas. When their 'seers' were moved, by saintly ecstasy, to pour out their thoughts and feelings in lilting and embellished verse, they were merely anticipating the Sumerian prophets and the Egyptian priest-kings by almost 20 centuries.* I have urged that the theory of an Aryan destruction of the so-called Indus-Valley Civilisation is based on inadequate premises and that the 'Dravidian invasion' of India is only an obstinate and unproven hypothesis. I have suggested that the entire population of ancient India (barring the well-recognised Ādivāsīs) was Aryan, in an ethnic and cultural sense, though it is possible that there was a small foreign amalgam (mainly of early historical times) due to a process of 'Hinduisation' of intruding communities, only too willing to be absorbed into the Aryan fold.

In these writings, the gentle reader will learn of the wide continental sway the Indo-Aryans had achieved, even before Salivahana instituted his famous era in 78 A.D. In the west,

* In the comparative time-table of cultural growths which I have envisaged, the Aryan philosophers were trying to define God (negatively at any rate) and to assess the Infinite, long before the ass-nomadic tribes of Abraham and Moses started on their wanderings. Banaras, I have suggested, was an ancient city long before Rome was founded, and when Athens was not even a fishing village. Takshashila had been a renowned bee-hive of scholarly activity, when Ichnaton fell in love with the glamorous Neshtika and with the transcendental philosophy of her Aryan homeland.

To spread themselves over Bharat, the Aryans must have taken two or three thousand years. Starting from the land of the rose and the nightingale (Kashmir and the Punjab), the Indo-Aryans travelled to the regions of the lotus and the peacock (the Jamuna-Ganga Doab), in the course of, perhaps, a thousand years. The *wanderlust* and the zeal of the missionary took them again, this time to the country of the jasmine and the koel (the Deccan and further south), by about 1000 B.C., as I have told in the following pages.

some Hindu Kingdoms and a sizable Aryan Empire flourished for the better part of a millennium, to be followed by the Indo-Aryan fire-worshippers (Persians) who dominated the Near East for several centuries before and after Alexander. An essentially benign and gentle rule, which lasted almost 1500 years (longer than any other Empire known to history), marked the march of the Indo-Aryans into South-East Asia. But like all kingdoms and empires, this too stagnated, decayed, tottered and fell, only to pass into the deep shadow of forgotten history; so much so that, in many of these lands, the original Indian fountain source was not even a distant memory !

Whither is fled the visionary gleam ?

Where is it now, the glory and the dream ? *

Is there any lesson to be learnt from this rise and growth, decline and fall, of Aryan rule, particularly in South-East Asia ? Does the Saga of the Indo-Aryans point a moral, besides serving to adorn many a tale ? Some would put down this oblivion of Hindu ascendancy to the caste system; some to the rigidity of the Aryan social set-up; still others to excessive ritualism and obsession with supra-mundane pursuits; and some more to the eternal internecine strife among the Aryan princes, wedded to the ebullient Kshatriya warrior code. But all these reasons, individually or even collectively, cannot explain the passing away of all vestiges of Indian overlordship. Some Empires which had no bedevilling caste problems (the Persian and the Roman, for example) crumbled into the dust after a few centuries. Others (like the British, the French, and the Dutch) have followed suit, although religious obsession and social rigidity were not their besetting sins. Still others declined and perished (e.g., the Portuguese and the Spanish) even though internal discord was not a prominent deleterious factor. It seems to me, therefore, that the explanation has to be sought elsewhere, i.e., in the very nature of human events, as ordained by a Power whose ways and reasons are often inscrutable. There is a tide in the affairs of nations, as in those of individuals. At the flood, nations rise, attain manly stature, and grow into brilliant maturity; when the ebb-time comes, there is an inexorable decrepitude and dissolu-

* Wordsworth.

tion, which may be violent and precipitate, or gentle and long-drawn-out, according to circumstance. As these pages will bear out, the Aryans never deserved such a harsh extinction of their beneficent hegemony as occurred in Polynesia and the New World. But the Power which guides the destinies of nations (as of individuals) apparently decreed this-wise, even as it did, that two twentieth-century wars (the most sanguinary the world had ever seen) were needed, to humble and to destroy the colonial domination and the financial exploitation of two continents, by European nations.

In fairness to him, I must dispel any erroneous impression the reader might harbour about my credentials for writing on such a momentous theme, to which many minds, far abler than mine, have directed their attention. I have no pretensions to any professional expertise in History and in Indological studies. Nor can I profess to be a connoisseur in archaeology or palaeography, beyond what a fairly intelligent student of Indian and World History could claim.

My work cannot accordingly be assessed at the level of the professional; at best, it can be viewed only as the essay of an enthusiastic amateur who has a few significant theories and interesting postulates to offer, which may attract discriminating students of our ancient history and culture. My humble effort probably abounds in inadequacies of manner and matter, for which the indulgence of the reader must be sought*. There are possibly inequalities in emphasis and the overlaying of the brush in spots, while presenting the Indo-Aryan picture. But I have generally endeavoured to keep my theories free of subjective feeling and the arguments in strict conformity with historicity. I have handled the facts with due reverence and, I trust, with adequate impartiality. If I have evinced occasionally some stress of enthusiasm in presentation, it is due to the emotion which the subject naturally evokes in an Indian. As the reader

* I feel specially apologetic over the lengthy list of *errata* inserted at the end of this volume; the next one, I hope, will show less disfigurement of this type.

will doubtless concede, it is difficult to 'lean over backwards and become coldly scientific when writing about one's own remote ancestors. It must be remembered that India is the only country in the world where ancient religion and philosophy, language and literature, tradition and culture, social manners and customs, have been handed down in unbroken succession, through countless generations to the living present.*

A state or society is a growth in time and not a mere syllogism in logic; when the past is put out through the door, it often comes in by the window. In the career of a great people, the essence of what has been is frequently the tincture of what will be. While racialism is a curse, and chauvinism nothing but a foul and futile obsession,** a reasonable and modest pride in one's national history (especially if it be full of deep and stirring achievements) is not necessarily a failing. The Indian nation has lately been born anew after centuries of foreign rule and exploitation, under a name (Bharat) which is sanctified in our Vedas. It is, therefore, all the more necessary that it should be aware of its brilliant past, when it stood spiritedly in the

* Tomlin thus defends our culture (Great Philosophers of the East. P. 15.): "The history of India, for example, sheds a flood of light upon the problem of what it is that constitutes a civilization or culture; for while India has been conquered and dominated again and again, its distinctive philosophy or metaphysics has survived, not as a curiosity or a 'cultural heritage' (as the classical Western philosophy has survived within our own civilization) but rather as the means whereby a vast community has preserved its conscious identity. The resulting unity, to quote that remarkable Orientalist, Rene Guenon, is a 'doctrinal unity'. Now that the Western domination is at an end, it is incumbent upon us to treat with respect that which we tended formerly to regard with aloof patronage. In short, we have ceased to teach; it is time that we should learn."

** Aryanism is not a racial concept, according to our teachers. Manu would define an Arya thus :

कर्तव्यमाचरन् कर्मकर्तव्यमनाचरन् ।
तिष्ठति प्रकृताचारे स एवार्थ इति स्मृतः ॥

"He alone is an Arya who sticks to his long-established Code of Conduct and does not deviate therefrom."

All the Smritikaras are unanimous in holding that merit alone is the test of worth, and not mere descent.

vanguard of ancient communities, carrying aloft into new lands the torch of religion and learning. As I have evidenced in these pages, the Indo-Aryans indulged in a splendid outburst of extra-territorial evangelism, in a joyous exercise of culture-dissemination, the like of which the world has not witnessed, before or since. Not only in the realms of philosophy, law and jurisprudence, but also in many of the arts and sciences which conduce to good and gracious living for mankind, did the infant people spread their warm glow, literally from China to Peru *

It has been suggested, on distinguished authority, that the ARYATARANGINI, which I have visualised as gushing streams of Indo-Aryan cultural effluence into distant lands, should be taken as more metaphorical than real, and that there could have been no great physical movements of clans and tribes and no actual migration of the inhabitants of Sapta Sindhu, even into those sparse lands which have been heavily coloured with the Aryan dye. In this view, the term 'Arya' would be more a symbol of the thought, the spirit and the mores of a distant and stagnant people, than connotative of racial or ethnic infiltration. In other words, it has been urged that it was the Aryan civilisation which was on the march in Vedic and post-Vedic times, and not the youthful people *en masse*.

* It need scarcely be emphasised that the earliest moral and legal codes, (the Niti and Dharma Sastras) were evolved in India, which was also the birth-place of the world's earliest republics and of representative institutions (the Sabha and the Parishad). In the arts of local self-government and of industrial organisation, India was a pre-eminent pioneer. In religious tolerance, Aryavarta was *non pareil*. You could deny God, and what is worse, condemn the Vedas (like Buddha and Mahavira) and still have monarchs bend low before you and millions kiss your feet. Even medieval India had no minorities like the Jews in Europe (to be mobbed by the people and robbed by the Kings). There were no wholesale hangings (as under Protestant Elizabeth) or burnings (as under Catholic Mary). Contrast the situation in 18th century France; no Protestant could be a lawyer, a doctor, a midwife, a grocer, a bookseller or printer, in pre-Revolutionary France!

Every man in India was free and there was no slavery of the horrible type which besmirched ancient and modern societies elsewhere. Readers of history must be aware that slavery survived in the British Empire till 1833 and in USA till 1865. Slave-trade was the source of much European wealth. Britain alone captured and sold 26 million African slaves in the 17th and 18th centuries!

There is much to be said for this point of view, which justly deprecates the vain concepts based on mere race and blood, and the self-exaltation of human groups as superior beings in special favour with God. But with all respect to this laudable anti-racist plea, it cannot be gainsaid that every available evidence (ethnic, social, religious, linguistic, artistic, *et al*) is overwhelmingly in favour of the assumption of a movement of peoples, at least of the *elite* variety, rather than a mere migration of ideas, language and cultural beneficence. In those dim days of pre-history which I have attempted to describe in these pages, *Kultur* could only have travelled on the chariots and the palanquins of the elite, if not on the mule-packs and the ox - waggons (not to mention the canoes and the catamarans) of the commonalty. The argument would be conclusive with regard to those areas (like Polynesia) where the Aryan was literally the first human to set his foot.

An exception to this situation would be where there is an assumed *polygenesis* of the same speech, religion, rituals, manners and customs in widely separated areas, through a species of divine dispensation. Such would be the case, for instance, if God, in his infinite *leela*, had planted an Aryan culture concurrently in Palestine on the one hand, and in Peru on the other, without the least semblance of any communication between the two regions. Such *polygenesis* of Hindu culture through divine intercession is the happy theory of some of our revered present-day Acharyas, who probably recall to their minds the Puranic legends of Brahma casting a lotus flower from his sky-seat and thus generating a culture and a people, wherever the lotus touched the soil. Such a hypothesis would, however, lift the argument to the level of the mystic and the supernatural, a plane which is, perhaps luckily, beyond the reach of the student of mundane history.

I am aware that the claims which I have made in these pages for the Indo-Aryans are not without powerful and learned opposition. It is one of the cruel ironies of fate that a people who have done so much for the spiritual and material welfare of humanity should have been the target of protracted inimical criticism. The Indo-Aryans have been described as fierce nomads, reckless vandals and barbarous despoilers of superior cultures,

by distinguished historians, some of whom I have cited in these writings. The descendants of these very Indo-Aryans, who inhabit this fair land of Bharat today, have not also escaped hostile animadversion. The reader will doubtless be acquainted with the fulminations of William Archer and Beverly Nichols, and the venomous outpourings of subsidised propagandists like Miss Mayo. Strangely enough, a few extrovert Indians, with a gift for fluent invective (and perhaps suffering from a sense of chronic frustration) have joined the ranks of our detractors, to the delight of Indophobes*. But, to use a phrase now popular in the American domestic scene, "We shall overcome". Bharat has survived many denigrations of its past; I am confident it will remain unscathed by the foul attacks on its present. A striking citation from Will Durant,** the eminent historian and philosopher, would be appropriate here:

"India was the motherland of our race and Sanskrit the mother of European languages. She was the mother of our philosophy; mother, through the Arabs, of much of our mathematics; mother, through Buddha, of the ideals embodied in Christianity; mother, through the village community, of self-government and democracy. Mother India, in many ways, is the mother of us all".

In conclusion, I would ask the gentle reader to suspend his judgment on my thesis till he has gone through the whole book. As a great philosopher† once said, "The reader may become confused and recollect many things which will bring him to a standstill; therefore, I pray him to proceed gently with me and form no judgment.....until he shall have read all".

14—4—1960

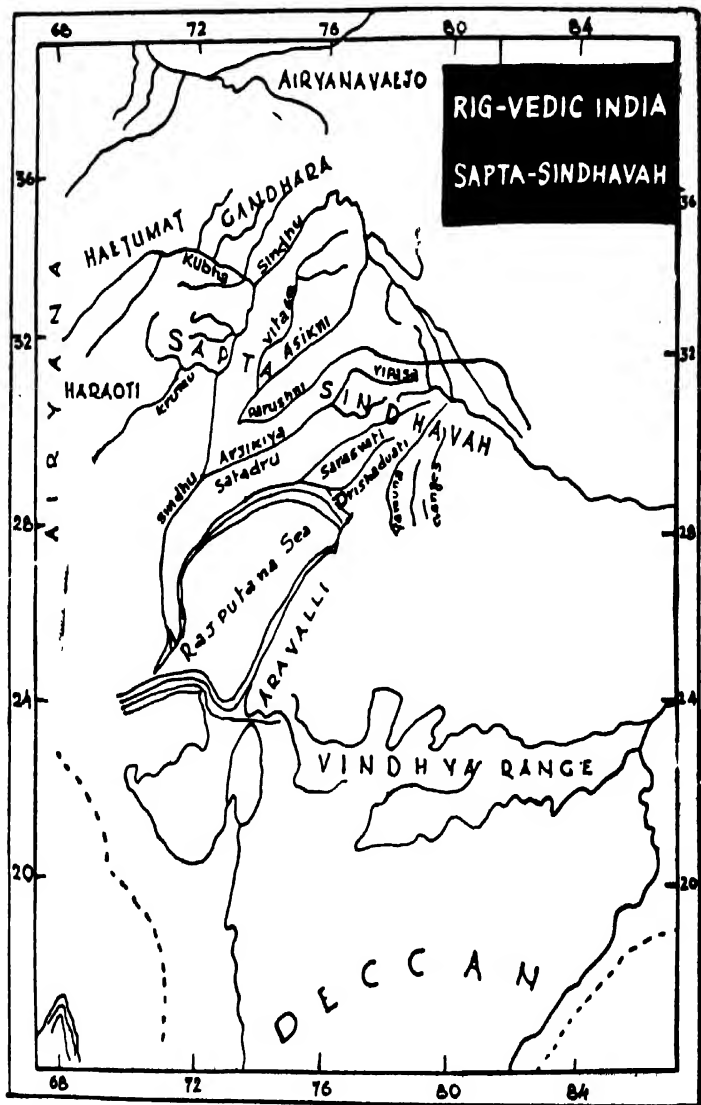
A. K. Raman.

* A particularly vicious and ill-timed attack on Indian society and culture by a Bengali writer was recently praised, in a B. B. C. broadcast. as a 'must reading' for British Parliamentarians! The scurrilous attacks on Sri Rama and Sita Devi by another writer of Indian parentage have also achieved some small notoriety abroad, if not in India.

** Vide his "Our Oriental Heritage".

† Spinoza.

OM TAT SAT



TO FACE PAGE 1.

CHAPTER I

INTRODUCTORY

THE HOME AND THE CHRONOLOGY OF THE INDO-ARYANS

The Western theory about the origin of the Aryans is all but too familiar to us, in its present form. Concisely put, this theory would ascribe to a historically distinguished people known as the Aryans, a pristine home somewhere in the region of the Caspian Sea; these nomadic tribes, inhabiting the steppes of lower Russia, are presumed to have been the fore-runners of a race, called later the Indo-Germanic by the European savants. These people are considered to have split up into two great migrating families, one travelling East towards Persia and India, and the other travelling West, towards Greece, Eastern Europe, Italy and the regions of middle Europe from where fresh migrations into farther Europe happened.*

This theory visualises the Aryans as having entered India in the middle of the second millennium B.C., through Afghanistan** and to have settled down in the Punjab and Sind, before pressing on towards the east and the south of the sub-continent. These nomads are supposed to have overthrown and enslaved the local population which, according to these theorists, had attained a high state of culture, as would be borne out by the archaeological evidences unearthed in the Indus Valley, principally at Mohenjodaro and Harappa. The so-called Indus Valley Civilization appears to be pre-Aryan to this school of thought, which would attribute to the Vedas no earlier date than the middle of the

* The earlier school of thought which held that the Aryan nations sprang from the hills and forests of Austria and of Germany is now under eclipse, but I have cited elsewhere the opinion of an important member of this school.

** The Vedic Index severely frowns on the suggestion of some European writers that the Aryans might have entered India through the Chitral Pass.

second millennium B. C. There are certain refinements of this theory. Some would equate the Indus Valley Civilization with those of Chaldea and the Euphrates Valley ; some others would trace points of similarity between this civilization and that of Egypt. Others still would like to endow it with a strong local label and see into it traces of the so-called Dravidian culture and language. A learned Jesuit historian had become so enthusiastic about this last theory that he had found it possible to write a large thesis in support.

Let us try to analyse and to examine critically this question of the origins of Aryan culture in India. A very useful starting point for this examination will be to fix the date of the earliest known literature in the world, viz., the Vedas. The theories dear to the heart of the Westerners would mark the upper limit of the Rig Veda to about 1500 B.C.* Some of our own writers on the subject, who have been schooled in the doctrines and methods of Western thought, have only too readily subscribed to this theory. Even such a distinguished authority like Dr. Radhakrishnan, found it necessary to be slightly apologetic about his ascribing to the Vedas a date as *early* as 1500 B.C.

The Vedas are four in number, viz., the Rig, the Sāma, the Yajus and the Atharvan. From a historical point of view, the Rig and Yajur Vedas are important, since the Sāma Veda is practically the Rig Veda set to music, while the Atharva Veda deals mainly with charms and incantations and has much of its material borrowed from the Rig. The Rig Veda contains over 10,000 sukta divided into ten Mandalas or Chapters. According to orthodox opinion, the Vedas are 'apourushēya' that is, without human origin or inspiration, and are purely revelations from God,

* The eminent-historian, Dr. R. K. Mookerji considers that the Atharva Veda is not later than 2500 B.C. (Hindu Civilisation, Vol. I, P. 12.) Dr. P. V. Kane's conclusion in his 'History of Dharmasastras' is worth citing. "The endeavour of most European scholars has been to show that the (Vedic) mantras could not have been composed before 1400 B.C. It must be said however that I do not subscribe to the view that 1400 B.C. is the upper limit of the original composition of the Vedic Hymns. These hymns may have been composed, for ought we know, several thousand years before that date."

taken down by various rishis or composers as occasion prompted.* The internal evidence of the Rig Veda itself shows that a period of nearly 500 years should have elapsed between the redaction of the first and the last mandalas. The evidence not only bears reference to the genealogy of the rishis, but also to the grammar and structure of the language, the astronomical data, the nature of themes dealt with as well as the refinements in prosody which reveal a progressive development of the poetic language which could only be the result of long and diligent cultivation.** If the last Samhitās of the Rig Veda were composed only in 1000 B.C., then what would be the age of the Yajur Veda? It is clear from the geographical and other evidences that the Yajur Veda is later than the Rig Veda by several hundred years. Unlike the Rig Vedic rishis, the composers of the Yajur Veda are familiar with the Indo-Gangetic plain and the flora and fauna of that region. For instance, the tiger is not mentioned in the Rig Veda, while it is frequently referred to in the Yajus. The use of rice as a principal article of food is not mentioned in the Rig. It is clear, therefore, that a long interval might have elapsed between the composition of the Rig Veda and of the Yajur Veda; one can safely assume such an interval to be in the neighbourhood of a 1000 years. This would take the date of the Yajur Veda down to the first century of the Christian era, which is obviously preposterous, if the Rig Veda is allowed an age of only 1500 B. C. for commencement.

Turning again to the post-Vedic literature, the Brāhmanas and the Āranyakas, these are obviously much later than the four

* To orthodox Hindus, the Vedas are the quintessence of all knowledge. They would not hesitate to say (as Omar Khayyam told of the Quaran) "Burn all your library, all that is in these books will be found in the Vedas"!

** "Besides the internal evidence afforded by differences in style, the hymns not infrequently avow a difference in date; and we find some ascribed to ancient rishis, while others admit of being new or newest composition. The great variety of metres composed shows also a progressive development of the powers of the language" (Wilson, Introduction to the Rig Veda, I. P. XVI). Macdonell who is, as a rule, very conservative in his assessment of Vedic culture says "Some hundreds of years must have been needed for all the hymns in the Rig Veda to come into being." This opinion is echoed by Winternitz.

Vedas, since they frequently cite the former and try to interpret their injunctions and elucidate their significance for purposes of practical household application. The Brāhmanas have a strong geographical and historical background and they often refer to countries and kings and episodes connected with various clans and families. It is commonly conceded, looking to the vigorous *prose* in which the Brāhmanas and the Āranyakas are couched, that they must have been composed many centuries after the Vedas themselves were perfected.* Wilson, who is an authority on the subject, considers that a thousand years would not be too long an interval to have elapsed for the altered conditions depicted in the Brāhmanas, as compared with the similar picture revealed in the Vedas. Conceding the justification for such a time lag the Brāhmanas and the Āranyakas should be pushed forward to about 500 to 1000 A D.; an absurdity which is patent on the face of it.**

We can now turn to the quasi-religious literature going back to rather dim, but discernible, periods of our ancient history, viz.,

* It is true that the (Krishna) Yajur and the Atharva Vedas contain some material in prose. This Vedic prose is however modelled on poetry. "The prose is very rhythmical and sometimes they become really poetical by the matter of style and cadence: there is music in this prose". (Dr. C. K. Raja, Survey of Sanskrit Literature, P. 33).

**Prof. P. Sengupta thus observes in his Introduction to the new edition of E. Burghess's translation of the Surya-Siddhanta (P. xxxii). "The earliest Brahmana period may be called the Rohini—Phalguni period xx. The summer solstitial colure of the earliest Brahmana period passed very nearly through star Leonis and the date when this was the case was 3100 B.C. The visual equinoctial colure passed through star Rohini or Aldebran. (The Satapata Brahmana shows) that (certain) sacrifices were begun as soon as the Sun turned north. It shows that the solstices had preceded by about 15° and that the date when this took place was 2000 B.C. xx Even at this time the fine early luni-solar cycle was known". Dr. R. K. Mookerji thinks that the Brahmanas are "not later than 2000 B.C.". (Hindu Civilisation, I. P. 46). He adds "The Rig Vedic Sanskrit shows no trace of a growing language; its entire grammatical mechanism is perfected.....pointing to the later and more advanced inflectional stage in the life-history of a language" (ibid. P. 85). He quotes Bunsen as saying that "even the earliest specimens of Vedic poetry belong to the modern history of the human race"—"The repetitions (of some hymns) in the Rig Veda point to their high antiquity".

the Dharma Sāstras and the Smritis. Considerations deduced from the probable progress of Hindu literature tend to the view that another long distance of time separated the age of the Brāhmanas and the Āranyakas, from that of the Sūtra-kāras. The Brāhmanas were evolved long before the Vedic knowledge and ritual had become crystallised and widely distributed. The manner and method adopted by the writers of the Brāhmanas prove conclusively that their composition had occurred before the Vedic Samhitās had been put into formal shape, had gained extensive currency, and had become readily recognised. When the Smritis were written however, the Vedas had undergone their final redaction and their study had become wide-spread and systematic. The age of the Sūtras, therefore, must be put some hundreds of years after the Brāhmanas were written. The Sūtras, as we know, deal with rules of conduct and application of the injunctions cited in the Brāhmanas with reference to religious ceremonies. The Sūtra-kāras quote the Brāhmanas as high but very ancient authorities. Apart from the ritualistic Sūtras, we have the philosophic ones, which are also subsequent to the Brāhmanas. The oldest Sūtras, attributed to Āsvalāyana, Āpastamba, Bōdhāyana and others, cannot be later than the sixth or the seventh century B. C. * We have the evidence of grammarians, in support of this conclusion that a long interval separated the age of the Sūtras from that of the Brāhmanas. We can recall the familiar names of Yāska, Pānini and Patanjali. It is now generally conceded even by some Western scholars like Goldstucker that the age of Pānini should be ascribed to the seventh century B. C., at the latest, while Yāska must have composed his Nirukta

* Dr. P. V. Kane holds the Dharma Sastras to be pre-Mauryan. Kautilya refers to them in his Arthasastra. Buhler considers the Apastamba Sutras to have been composed in the 6th century B.C. and that Gautama and Bodhayana were even earlier in date. Asvalayana probably ante-dates the latter Smriti-karas.

and Nighantu, some two centuries earlier. * Pāṇini himself refers to ancient teachers like Upavarsha, Pārāśarya, Karmāṇḍa, Sakatāyana, Āpīśali, Śākalya etc. It is obvious that the science of etymology and grammar could have developed only long after prose composition itself had gained substantial vogue with specific rules and modes of artistic expression. It is common knowledge that in the history of any literature, poetry comes first, then prose, and then the rudiments of grammar and etymology. If Yāska is ascribed to a date before the 8th or 9th century B. C., it is evident that the Brāhmanas must be at least older than 1500 B.C. This assumption is confirmed by the chronology of the Upanishads, which take a place between the Brāhmanas and the Dharma Sūtras, in the order of literary events. While some of

*Panini's date has not been without controversy among historians. Goldstucker placed him in the 7th century B.C. "at the latest" and Max Muller in the 6th; Bhandarkar and Pathak thought that Goldstucker's assessment was correct. Other European writers have ranged from the 5th to the 4th Century B.C. V. S. Agravala (in his monumental work "India as Panini knew it") votes for the 5th century, on various grounds, but principally because Panini is supposed to refer to Maskarin Gosala, a senior contemporary of Buddha, in a famous Sutra. Even on the last reasoning, Panini's date could be the 7th century B.C. as Buddha lived between 664 to 544 B.C. and Buddha had attacked Maskarin as a dangerous heretic responsible for propagating the Dhaistika (i.e. Determinist) doctrine of life. In Buddhist literature Maskarin is described as an elderly teacher, when Buddha was in his teens.

From all evidence it is clear that Panini lived long before his province (Gandhara) was over-run by the Persians in circa 530 B.C. and it is impossible to make Panini the contemporary of King Maha Nanda of Pataliputra (450 B.C.). Katyayana (5th-4th century B.C.) would not have needed to write a somewhat critical commentary on the Ashtadhyayi, if he had been a contemporary of Panini. From literary and other evidence it would appear that there was an appreciable time-lag between Kautilya (4th century B.C.) and Panini. The latter was not aware of the rise of the European Greeks to fame and power and probably had no knowledge also of the Asiatic Greeks, as I had indicated in a separate note. Lastly, I may mention that there is a different interpretation of the Paninian Sutra, in which 'Maskarin' is not treated as a proper name, but as a reference to Brahmin mendicants, carrying the bamboo stick. The language of various Sutra-karas, writing in the 6th and 5th centuries, B.C., seems to suggest that Panini had preceded the Sutra-karas by a good period of time. Finally, Dr. Radha Kumud Mookerji supports the opinion of Goldstucker, and gives Panini a date of circa 700 B.C. (vide "Glimpses of Ancient India").

the Upanishads are, of course, of recent origin and of spurious authorship, the oldest of them precede the grammarians and the Sūtra-kāras, who frequently cite them either directly, or otherwise. It would be correct to place the age of the older Upanishads, therefore, between the period of the Sūtras and that of the Brāhmanas. This would mean the fixing of their composition in the period running from 1500 to 1000 B.C.

It will be conceded from what I have stated before, that the Western assessment of the age of the Rig Veda is substantially questionable. According to a reconstruction made by prominent Indologists (among whom I would particularly mention the eminent Dr. Kane) the following chronology should be adopted for the various epochs of our sacerdotal literature. This assessment would place the Rig Veda between 5000 and 4000 B. C., the Yajur Veda somewhere between 4000 and 3000 B. C.; the Brāhmanas will be dated between 3000 and 2000 B.C., while the major Upanishads would be given a date ranging from 1500 to 1000 B. C. We have already referred to the age of the grammarians* the earliest of whom would probably reach back to the tenth century B. C. The major Sūtra-kāras naturally belong to various dates, the oldest going back to the seventh or eighth century B. C. A special mention must be made, however, of the Manusmṛiti in this connection. Manu notices no avatars and ignores the Purāṇic stories and legends. It is consequently suggested that he must have lived anterior to the composition of the Rāmāyana and Mahābhārata, in the seventh or sixth century

*It takes a long time for a language to develop its table manners and its set signals of traffic. European tongues took hundreds of years in this process. (Modern grammar in English began only under the Stuarts; before their time English enjoyed a racy freedom from syntax, spelling and grammar). The earliest grammatical treatises in Sanskrit were written circa 1000 B.C.; this reinforces the view that the epoch of Sanskrit poetry and prose, (Vedas and Brahmanas) must have preceded Yaska and Panini by many, many hundreds of years. In India it was, long considered a heresy to translate or to annotate the Vedas! The early Popes severely discouraged the teaching of (Latin) grammar. Pope Gregory, the Great, wrote thus to one of his Bishops (6th century A.D.) "A report has reached us, which we cannot mention without a blush that thou expoundest grammar to certain friends". The Bishop was ordered to desist from this deadly sin!

B. C.; and Manu should have preceded the epics by a substantial interval. The suggestion that there is some Buddhistic influence in Manu is not warranted by facts, since the injunction against the killing of, or non-injury to, animals, cannot be solely attributed to Buddhist or Jaina teachings, but can be traced even to the Upanishads, which were strongly opposed to animal sacrifices. It must be mentioned that the doctrines propounded by Gautama Buddha are by no means original to him, but form the common background of all ancient religious and social thought in Āryāvarta, some of which were later crystallised in the Bhagavad Gīta. Even according to Buddhist tenets, Gautama was preceded by a number of teachers. Similarly, Vardhamāna Mahāvira is supposed to have been the 29th of the line of Tīrtankaras, the earliest of whom was Adinātha or Rishabhanātha, who perhaps lived in the 10th century B. C.* The doctrine of ahimsā found in Manusmṛiti, therefore, has no necessary connection with the historical Buddhism, or Jainism, but must be attributed to the evolution of Indian philosophic thought consequent on the eclipse of orthodox ritualism. This happened especially in the wake of the esoteric Upanishads, which were less than luke-warm about animal or other sacrifices, and quite opposed to Vedic formalism, with its emphasis on pious works, ceremonial observances, and vocal prayer.

There is another line of approach to the problem of the period of the Vedas. The age of the Mahābhārata war would, in some measure, determine the Vedic and the post-Vedic chronology through a process of counting back. From astronomical and other data, it is now commonly believed by Indian scholars that the battle between the Pāṇdavas and the Kauravas was fought about 1440 B. C.** On this assumption, the Rāmāyana episode

* Twenty-three Tīrthankaras, beginning with Rishabha and ending with Parsva are mentioned in ancient Jain texts. Rishabha was a Kshatriya king who renounced his throne, as did Parsva, also a monarch of Benaras, belonging to the Ikshvaku line of kings. He is a historical personage and lived two centuries before Mahāvira (i.e. in the 9th century B.C.). He lived to a ripe old age and died at Sammeta (now known as Parsvanath Hills) near Gomoh in Bihar.

** It is significant that a great solar eclipse occurred in 1440 B.C. However Pargiter and some Indian scholars fix the date of the Great War in circa 1000 B.C. (vide Note on Indian Traditional Chronology).

could not be placed later than 2000 B.C. Granting these dates, it would be clear that the Western theory about the invasion of India by the Aryans in 1500 B.C. would fall to the ground. The epoch covered by the events depicted in the Rāmāyana relates to a time when the Aryans had migrated from their original homeland in the Punjab and Sind towards the east, across the Yamunā and the Gangā, and settled down in what was to be known as Āryāvarta in later scriptural writings. If the dynasties of the Kōśalas and the Vidēhas, tracing their ancestry to King Ikshvāku and to King Mādhava, had been well established in the Indo-Gangetic plain in the second millennium B.C., it is obvious that the Aryans could not have crossed into the Punjab about 1500 B.C. as some Western scholars would like the world to believe. A favourite weapon in the armoury of the Western historians is the (alleged) unhistorical and spurious character of the Hindu Purānas. These are labelled as pure myths and fanciful fictions unrelated to fact. It is however doubtful if those Purānas, which have, prima facie, geographical dimensions and historical backgrounds, could be so airily dismissed. The experience of other nations (e.g. the Hebrews, the Greeks and the Romans) shows that ancient legends anchored on geographical data usually have some substratum of historical truth, as now evidenced by archeological research. The stories connected with the Trojan war, the Old Testament incidents, and the legends of early Rome have all been proved to be based on some kind of actual happenings, embroidered here and there with pious or poetic fancy. In the same way, the Rāmāyana and the Mahābhārata legends, especially those with definite geographical indications surrounding them, must obviously have some basis in historicity, exaggerated or distorted though the latter might be. The association of these epics with place names like Mithilā, Ayōdhyā, Hastināpura, Indraprastha, Mathurā, Dwāraka etc. is strong evidence of the rough historical veracity of the incidents, thrown up in vivid poetry for future delectation.

There are various other evidences which would reinforce the conclusion that the movement of the Aryans from the Punjab towards eastern India must have been much earlier than 2000 B.C. As I had mentioned before, the authors of the Yajur Veda

are familiar with the Indo-Gangetic plain and the country south of it up to the Vindhya. The Satapatha Brāhmaṇa mentions various kingdoms in the Aryan fold, and incidentally, outside its perimeter. The rise of the various states mentioned in the Rāmāyana, the Mahābhārata and the Purāṇas must have taken place between the years 3000 and 2000 B.C. The following passage from the Satapatha Brāhmaṇa may be of interest in this connection :

“Māthava; the Vidēgha, was at that time on the (river) Saraswati. He (Agni) thence went burning along this earth* towards the east ; and Gotama Rāhugana and the Vidēgha Māthava followed after him as he was burning along. He burnt over all these rivers. Now that (river) which is called ‘Sadānira’ (Gandak) flows from the northern (Himalaya) mountain ; that one he did not burn over. That one the Brāhmanas did not cross in former times, thinking, ‘it has not been burnt over by Agni Vaisvānara.’

“Now-a-days, however, there are many Brahmanas to the east of it. At that time, it (the land east of the Sadānira) was very uncultivated, very marshy, because it had not been tasted by Agni Vaisvānara.

“Māthava, the Vidēgha, then said (to Agni) ‘Where am I to abide?’ ‘To the east of this (river) be thy abode’ said he. Even now this (river) forms the boundary of the Kōśalas and Vidēhas ; for these are the Māthavas (or descendants of Māthava).”

It is clear that this great Brāhmaṇa has presented here a graphic verbal picture of a particular movement of the Indo-Aryans across the sub-continent at a remote age, i. e. long preceding the establishment of the many kingdoms like Kāśi, Ayōdhya.

* The phrase “Agni went burning along with earth” is merely the poet’s way of describing the Aryan cults of tending ritual fires and performing sacrifices through them.

and Mithilā, which flourished hundreds of years before Buddha. As Prof. Max Muller observes, there are passages in the Brāhmanas full of genuine thought and feeling* and most valuable as pictures of life and as records of early struggles, the like of which are not to be found in the literature of any other nation on earth. With their compact grammatical forms and expressive particles and the habitual employment of the *oratio directa*, the Brāhmanas are not without a certain beauty of their own. What is most valuable to the student of history are, however, the geographical and ethnical allusions contained in them. They deal almost exclusively about the regions along the Gangā and the Yamunā; they mention prominently the Kurus and the Pāñchālas who figure so much in the later Mahābhārata war. The Pāñchālas were in olden times known as the Krivi and a tribe of this name is mentioned in the Rig Veda; while the Kurus, though not mentioned directly in the Veda, find a possible allusion in a king called Kurusravana in one of the Rig Vedic hymns. There is an indication in the Aitarēya Brāhmaṇa that the Kurus at one time lived beyond the Himalayas, i. e., in the region of modern Kashmir and perhaps Nepal.** East of Madhya Dēśa, there was another confederacy of people no less important than the Kuru-Pāñchālas, viz., the Kōśala-Vidēhas whose scions shine so resplendently in the pages of Vālmiki.

The facts mentioned above clearly indicate that round about the years 2500 to 2000 B. C. (i.e. in the period depicted in the Brāhmanas and the Āranyakas) various Aryan tribes had moved

* "In fairness to the religion of the Brahmanas it is to be said that we find frequent traces in them of high moral sense and exalted sentiment. The conception of man's duty first arises here". (Dr. Radhakrishnan; Indian Philosophy Vol. I, P. 131).

A contrary estimate emanates, astonishingly, from an Indian critic (Dr. Behendale) writing in the 'Vedic Age'. (P. 416.) He calls the Brahmana literature "Dry and repulsive ... their proper subject is mystical and puerile speculation on ritual practices. ... The prolixity of Brahmana authors is sickening".

** In Panini's time the Uttarakurus inhabited the territory known as Kamboja, (above modern Afghanistan).

from Sapta Sindu and settled in the Indo-Gangetic plain and had developed into highly civilised communities, ruled over by learned and renowned kings. There is evidence to show that the kingdoms of Ayōdhyā and Kāsi were many centuries old at the time of Buddha.* Buddha, as we know, attained his Parinirvāna in 544 B.C., but even before him, there had been many kings of Kāsi. If Banaras had thus been an ancient city, by say 1000 B.C. it is clear that the Aryans could not have entered the Punjab only about 1500 B.C., via the Hindu Kush region.

Mention might also be made here of the recent discovery of certain inscriptions which had been found at Boghaz Keui and at Kish wherein, while recording a treaty between the Hittites (who were a branch of the Aryans) and the local ruler, reference is made to such names as Indra, Dasaratha, Nāsatya and the Aswins. The date of this inscription is fixed near about 1400 B.C. It is significant evidence that long before this date, the Indo-Aryans had marched into the east and south of India and had established kingdoms, one of whose rulers was the famous Dasaratha of Ayōdhyā. The descendents of Dasaratha were the illustrious twins of the Solar race, Lava and Kusa, who are alleged, in many a legend, to have led large bodies of the Aryan elite into the countries to the west of the Indus. One branch of this great exodus apparently went into Anatolia and Syria under the leadership of Lava; the other, presumably guided by Kusa, settled in the Fertile Crescent and founded various principalities which were collectively known as Kushite or Kassite to their successors. If my above identification be correct, it would be clear that the chronology of the Western scholars is niggardly towards the claims of the Hindus concerning the hoary antiquity of their Puranic heroes. By post-dating the Vedas and the

* A king of Kasi is mentioned in the Brihad-Aranyaka Upanishad. Buddha frequently mentions Brahmadatta as a very ancient ruler of Kasi, in the Jataka tales. The Brahmanas repeatedly refer to King Ajatasatru of Kasi, a contemporary of King Janaka of Vidaha—(2000 B.C.?). Panini (8th or 7th century B.C.) refers to Panchala Babhravya as the author of the Krama-patha of the Rik Samhita (Panini IV 2 (81)). Babhravya was the minister of King Brahmadatta of Kasi (Dakshina-Panchala).

Vedic literature, these scholars have confounded the history of the origin and movements of the Aryan peoples in India.

The chronological problem can be approached from a different angle also. We know that the Aryans moved from their original habitat, mainly Afghanistan and the Indus Valley, into the Indo-Gangetic plain and then southwards through the Deccan to the tip of the Peninsula. At the time of the Rāmāyana, South India was practically *terra in-cognita* to the Aryans, except for stray and daring incursions by enterprising priests and princes. Sri Rāma, in his travel to the southern sea, passed through unknown countries inhabited by strange people, some of whom were considered to be possessed of such sub-human characteristics as to be classed with monkeys. It is true that he found in Lankā (or Ceylon) a very advanced civilisation; but this was probably due to the fact that the Aryans had moved to Ceylon by sea via Sourashtra even before they traversed Peninsular India. A similar explanation can possibly be found for the mention of cities like Kavātapuram (a seat of Sangam learning) in the Rāmāyana by Vālmiki but it is more probable that the great poet was using *his* contemporary geographical knowledge (of the 8th or 7th century B.C.) while narrating the heroic deeds of Sri Rāma, about 1300 years earlier. By the time of the Mahābhārata war, however, Aryan influence had spread very far down to the South. If we take the date of the War as circa 1400 B. C., the beginnings of Aryan influence in South India should be traced back to the same date. It is true that there is a historical gap which is still to be bridged before we can safely fix the period of the entry of Aryans into South India, but the following facts would go to support the assumption that the progress of the northern peoples into the deep South could not have been much later than 1000 B.C.* According to Tamil

* Recent archaeological investigations, conducted at the early Chola capital of Uraiyur by the Madras University, under the guidance of Dr. T. V. Mahalingam, have unearthed unmistakable evidence of Aryan influence (like characteristic North-Indian pottery and inscriptions) in Brahmi script attributable to the 2nd or 3rd century B.C. [See Note II to Introduction.]

literary traditions, there existed in Tamilakam the First and Second "Sangams" at Kavātapuram and Dakshina Mathurai, long before the period of the third Sangam which flourished at Uttara Mathurai, i.e. present Madurai. Unfortunately, no literary works of the first two Sangams have survived, but in the third Sangam, we find the earliest available Tamil work, viz., the Tolkāppiyam. This work on grammar and etymology, which is usually ascribed to the 3rd or 4th century B.C. is modelled on that of Pānini, the Tamil verses even being called sūtras. The author, Tolkāppiyānār, was obviously familiar with Sanskrit language, literature and grammar. A Tamil technical composition of this nature would postulate the existence of a considerable body of Tamil works of a much earlier age, all of which must have doubtless possessed strong Aryan influences. Mention may also be made of "Agastyam" a lost grammatical work attributed to Rishi Agastya.* Another great Tamil composition, of perhaps 200 B.C., the Tirukkural, is now commonly conceded to be indebted for much of its material to earlier Sanskrit works. The influence of Jain and Buddhist thought on South Indian literature, as seen in the twin epics, Manimēkhalai and Silappadikāram, is also not small. A Pandyan king is mentioned in the Mahābhārata as attending the swayamvara of Draupadi. All these things go to show that the legend of Agastya bringing, in pre-historic times, cultural knowledge and literary techniques into the South must have some substantial historical basis. This well-known saint and coloniser is credited not only with spear-heading Aryan cultural invasion of South India, but also with the setting up of numerous overseas settlements and trading centres, extending right up to the Indonesian Archipelago, which was probably reached a few centuries prior to the Christian era. The fact that Agastya's beginnings have been lost in the haze of antiquity, would perhaps reinforce the view that the Aryans must have come to South India many centuries before the beginnings of recorded history. On this surmise, the Aryan communities must have existed in North India some thousands of years before the birth of

* Curiously, Agastya is mentioned in the Rig Veda (I, 179) as a "fierce sage who cherished both Varnas" (i.e. Aryan and non-Aryan), thus perhaps indicating the Rishi's cosmopolitan and evangelical outlook.

Christ and their movement into the Deccan and further down must have taken place over a thousand years prior to the above date.

Let us now turn to the enigma of the Indus Valley Civilization. The archaeological discoveries at Harappa and Mohenjodaro, have unearthed the remains of a great civilization and culture, which had been the puzzle of Indian historians for sometime. The Western scholars instilled, as we have seen, with the belief that the Rig Veda could not be older than 1500 B.C., had to find an explanation for this culture which seemed to rival that of Sumer and Egypt, in antiquity and development. They naturally came to the easy inference that the Indus Valley culture was not only non-Aryan, but pre-Aryan and that its destruction was due to the aggressive Aryan inroads into the Valley in the middle of the second millennium before Christ. Recent researches by Indian scholars have thrown doubt on this theory.* Nearly 30 years ago, Dr. Waddel wrote a book on the culture discovered at Harappa and Mohenjodaro in which he tried to prove that these cities were of post-Vedic date and that the seals and other objects of interest were completely Aryan in character and that the language impressed on the seals was Sanskrit. He even professed to have deciphered some of the seals, in one of which he read the signature of King Dilipa, the ancestor of Sri Rāma. Unfortunately Dr. Waddel's daring opinions could make little headway at the time against the firmly set views of the other schools. Recently, however, even some official archaeologists have impugned the doctrines of Marshall, Wheeler and others. For instance, Shri T. N. Ramachandran of the Indian Archaeological Department concurs partly in the views of Dr. Waddel. The Indian archaeologist has apparently succeeded in finding some clues to the reading of the Indus Valley pictographs, which he claims to have been cast in the Sanskrit tongue, and which were the remote ancestors of the Brahmi script, in his opinion.

*The views of a well-known American writer on this point will be found in the Note attached.

According to this new school of thought, the Indus Valley civilization is essentially Aryan and post-Vedic in chronology, and perhaps contemporary with the epoch depicted in the Rāmāyana. The 500 and odd characters of the syllabry writing of this culture, which have been delineated, suggest themselves to these experts as indicative of Hindu iconography and Vedic ritual. In one famous seal, they have seemingly discovered the picturisation of the Vedic hymn referring to the deity known as Bhūtēśvara or Pasupatsīvara (or Lord of Animals) to whom an invocation is addressed under the title Trisuparna, or the "Three Golden-winged".* Pasupati or Rudra is held to be depicted on the seal to suit the following Vedic invocation: "Brahmā Dēvānam, Padaviḥ Kavīnām, etc. etc."

It is a popular concept of the Western critics that the ancient Indo-Aryans did not learn the art of writing till about the 7th or 8th century B.C. The Indus Valley civilisation, therefore, repre-

* "It is a familiar conceit with Vedic writers to depict Prajapati or the Creator of the World, as a Suparna or the "golden-winged" eagle. This depiction is embodied in the famous Rig, to which is traced the Vedantic idea of Cosmic Unity, or the Oneness of God. "Suparnam Viprah Kavoyo Vacobhir Ekam Santam Bahudha Kalpayanti". (R.V. x. 114).

In the same strain, another hymn calls the Divine as Atma anastha (without form) transforming itself into Matter (Bhumi), Life (asuh : prana) and Blood (asrik : sonita). (I. 46). The One (Ekam) is described as Aja (birthless) (Ib 6). Another hymn conceives of the Jivatma and Paramatma (Individual Soul and OverSoul) as "two birds perching on the same branch of a tree (suparna sayuja sakhaya), of which one eats its sweet (svadu) fruit (of worldly enjoyment or samsara), and the other looks on with indifference, (unmoved by maya). The Svetasvatara Upanishad points to the Supreme Deity of all Deities (Eko Devah), immanent in all creatures (sarvabhuteshu gudhah), all pervading (sarvavyapi), the Inner Soul of all creatures (sarvabhutantaratma). Thus the Rig Veda presents the highest and most abstract conception of Divinity conceivable. Its great Gayatri Mantram (R.V. III 62, 16) even defines the Divine as the principle of thinking (manana) in the mind of man.

Rig Veda III, 54, 8 speaks of the Universe as "an integral multiplicity. (Vīśvam Ekam). As Yaska, the great Vedic authority, points out in his Nirukta (VII. 4), "Owing to its greatness, the One Soul is described as if it were many."

sented to them something non-Aryan since it had reached the stage of using pictorial syllabry. Let us now analyse this charge of technical illiteracy against the Indo-Aryans. It is true that these ancient peoples, as many of their descendants today, practised the arts of learning by rote and by memory. Instruction among them was mostly oral and it was conveyed to the minds of the pupils without reference, generally, to books or writings. But this does not prove that the Vedic Aryans had no alphabet or its primitive equivalent and that they could not put their compositions on the tālapatra. The arguments which could be given to controvert such a supposition are several. The Vedas use the expression "One saw speech", thereby implying that what was spoken was also reduced to writing. If there were other peoples who knew the art of writing about the same time, like the Egyptians and the Sumerians, it would be strange if the Aryans, who had reached a high degree of civilisation, did not know it too. Further, other Aryan clans like the Hittites, who were either dropped on the way according to the Germanic school, or who marched westwards from the Caucasian steppes, about 1500 B.C., simultaneously with the Indo-Aryan march to India, according to the later Western historians, had developed pictorial writings, independently of the Egyptians. Students of Indian lore are familiar with the famous story of Śakuntalā and Dushyanta, in which the love-lorn Śakuntalā writes a letter on a lotus leaf to be delivered to her husband. (Bharata, the son of Śakuntalā and Dushyanta, is referred to in the Vedas). Similarly Ūrvasī writes a *billet doux* to Purūravas, which, unhappily for the love-stricken monarch, falls into wrong hands. Rukminī, in like fashion, indites a passionate missive to Śrī Krishna, in the Mahābhārata story. Even if all these examples be now dismissed as anachronistic flights of poetic fancy, they indicate that the great dramatists of ancient fame did not feel that they were creating figments of imagination inconsistent with historicity, a fact which perhaps strengthens the case for crediting the Vedic Aryans with a knowledge of the lipi.* Further, the Vedic Aryans not only knew

* In 'The Great Liberal' P. 778, the late P. S. Sivaswami Iyer says. "I am by no means disposed to accept the theory that the art of writing was unknown to the Indians till it was introduced by the Phoenicians. Is there any reason to doubt the statement that the signet ring of Rama bore his name."?

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In the same strain, another hymn calls the Divine as Atma anastha (without form) transforming itself into Matter (Bhumi), Life (asuh : prana) and Blood (asrik : sonita). (I. 46). The One (Ekam) is described as Aja (birthless) (Ib 6). Another hymn conceives of the Jivatma and Paramatma (Individual Soul and OverSoul) as "two birds perching on the same branch of a tree (suparna s ayuja sakhaya), of which one eats its sweet (svadu) fruit (of worldly enjoyment or samsara), and the other looks on with indifference, (unmoved by maya). The Svetasvatara Upanishad points to the Supreme Deity of all Deities (Eko Devah), immanent in all creatures (sarvabhuteshu gudhah), all pervading (sarvavyapi), the Inner Soul of all creatures (sarvabhutantaratma). Thus the Rig Veda presents the highest and most abstract conception of Divinity conceivable. Its great Gayatri Mantram (R.V. III 62, 10) even defines the Divine as the principle of thinking (manana) in the mind of man.

Rig Veda III, 54, 8 speaks of the Universe as "an integral multiplicity. (Vīśvam Ekam). As Yaska, the great Vedic authority, points out in his Nirukta (VII. 4), "Owing to its greatness, the One Soul is described as if it were many."

sented to them something non-Aryan since it had reached the stage of using pictorial syllabry. Let us now analyse this charge of technical illiteracy against the Indo-Aryans. It is true that these ancient peoples, as many of their descendants today, practised the arts of learning by rote and by memory. Instruction among them was mostly oral and it was conveyed to the minds of the pupils without reference, generally, to books or writings. But this does not prove that the Vedic Aryans had no alphabet or its primitive equivalent and that they could not put their compositions on the *tālapatra*. The arguments which could be given to controvert such a supposition are several. The Vedas use the expression "One saw speech", thereby implying that what was spoken was also reduced to writing. If there were other peoples who knew the art of writing about the same time, like the Egyptians and the Sumerians, it would be strange if the Aryans, who had reached a high degree of civilisation, did not know it too. Further, other Aryan clans like the Hittites, who were either dropped on the way according to the Germanic school, or who marched westwards from the Caucasian steppes, about 1500 B.C., simultaneously with the Indo-Aryan march to India, according to the later Western historians, had developed pictorial writings, independently of the Egyptians. Students of Indian lore are familiar with the famous story of *Sakuntalā* and *Dushyanta*, in which the love-lorn *Sakuntalā* writes a letter on a lotus leaf to be delivered to her husband. (*Bharata*, the son of *Sakuntalā* and *Dushyanta*, is referred to in the Vedas). Similarly *Urvashi* writes a *billet doux* to *Purūravas*, which, unhappily for the love-stricken monarch, falls into wrong hands. *Rukmini*, in like fashion, indites a passionate missive to *Śrī Krishna*, in the *Mahābhārata* story. Even if all these examples be now dismissed as anachronistic flights of poetic fancy, they indicate that the great dramatists of ancient fame did not feel that they were creating figments of imagination inconsistent with historicity, a fact which perhaps strengthens the case for crediting the Vedic Aryans with a knowledge of the *lipi*.* Further, the Vedic Aryans not only knew

* In 'The Great Liberal' P. 778, the late P. S. Sivaswami Iyer says. "I am by no means disposed to accept the theory that the art of writing was unknown to the Indians till it was introduced by the Phoenicians. Is there any reason to doubt the statement that the signet ring of Rama bore his name."?

Mathematics but also Astronomy.* They were able to count up to millions of millions (*arbuda* and *parārdha*) and they were able to predict astronomical events like eclipses, long before they occurred, through a series of intricate calculations. This must imply an ability to do complicated arithmetical problems which could not be done without written devices. The Vedic ritual, especially the building up of the fire altar, involved the use of much geometry, which science could not have been put to use mentally even by super-men like the *rishis*. It is clear that numerals or numbers must have been known to the Aryans in the same way as they were familiar with weights and measures. It is common knowledge that, in the beginning of civilization, numbers were always represented by alphabetical letters; (the Roman example is familiar as also the Grantha characters in South India). A race which was capable of counting up to millions of millions and which had invented the zero and the decimal system, must have used alphabetical indices for all numerical notations. Mention may be made also of the fact that—thanks to their inveterate habit of gambling—the Aryans were familiar with the numerals shown on the dices and the dice-boards and those numerals must have had some correlation to the ‘*aksharam*’ or the alphabet. As mentioned earlier, in the Hittite Empire, which flourished from 1700 B.C. to 1200 B.C., the art of writing was well-known and numerous cylinder seals with writing on them have been unearthed. If the Aryans in Anatolia knew how to depict their history scriptographically, it stands to reason that the same group

* It is believed that the *Gavamayana* sacrifice was the symbolic representation of the efforts made to square the Vedic Lunar Calendar with the Solar year by adding inter-calary days. In this connection, the following comment of Dr. P. V. Kane is worth quoting (*History of Dharmasastra*).

“It is indeed remarkable and indicative of the bias of Western scholars that while Prof. Keith in his work ‘*The Religion and Philosophy of the Veda*’ refers, ad nauseum, to all sorts of lucubrations by European scholars on the origins of the Vedic sacrifices, about.....rain spells and festivity rites.....he does not condescend to notice the views of Dr. Shama Sastry and Mr. Tilak which have far more probability than many of the learned hypotheses advanced by European scholars, who appear to be obsessed by the notion that Vedic usages must be similar to practices found in the XIX Century among the backward races of Africa etc.”

of peoples, who had moved elsewhere to the east (as fancied by European critics) should also be familiar with that useful art. The fact that learning was transmitted by word of mouth from teacher to pupil is no argument against this supposition since, even today, the same system of inculcation largely prevails even where both the teacher and the taught are familiar with the written alphabet. In Vedic rituals a sound knowledge of geometry was essential, especially for building the fire-altars; and geometry could be learnt only through symbols for words and figures. Further, the letter 'OM' had to be written out on ground or water in some age-old domestic rites. For instance, in the *Trikāla Sandhyā*, the aksharam 'OM' had to be written on water with the finger tip to be placed later on the forehead, with due reverence.

In the *Brāhmanas*, there is frequent reference to writing.* For example, in the *Satapata Brāhmana*, there is the following quotation :

“ The *Brāhmanas* (Priests) are the guardians of this sacrifice ; for guardians of the sacrifice, indeed, are those *Brāhmanas* who are versed in the sacred *writ* because they spread it, they originate it. For this reason, he says, “The *Brāhmanas* are the guardians of the sacrifice”.

In the *Bhagavat Gīta*, the Lord says that he is the first of all letters i.e. *akhāra* or the letter 'a' of the Sanskrit alphabet.**

“ *Aksharānām Akhārōsmi*”

Distinguished scholars, like Roth, Buhler and Goldstucker, have averred that the Aryans knew the art of writing at the time

* The word *Varna* (or letter implying a conventional mark to represent spoken sound) occurs in the *Aitareya Brahmana* V 32 (2)., *Kausitaki Brahmana* XXVI. 5. etc. ‘*Varnin*’ means a writer. The *Vedas* refer to ‘*Ganakas*’ or astrologers; how can a *Ganaka* predict, without a written horoscope, a man’s future or the fate of kingdoms ?

** Thus Sir L. Wolley “Future archaeological discoveries may yet show that, even if the form of the Harappa script perished, yet its traditions influenced the development of Sanskrit writing”.

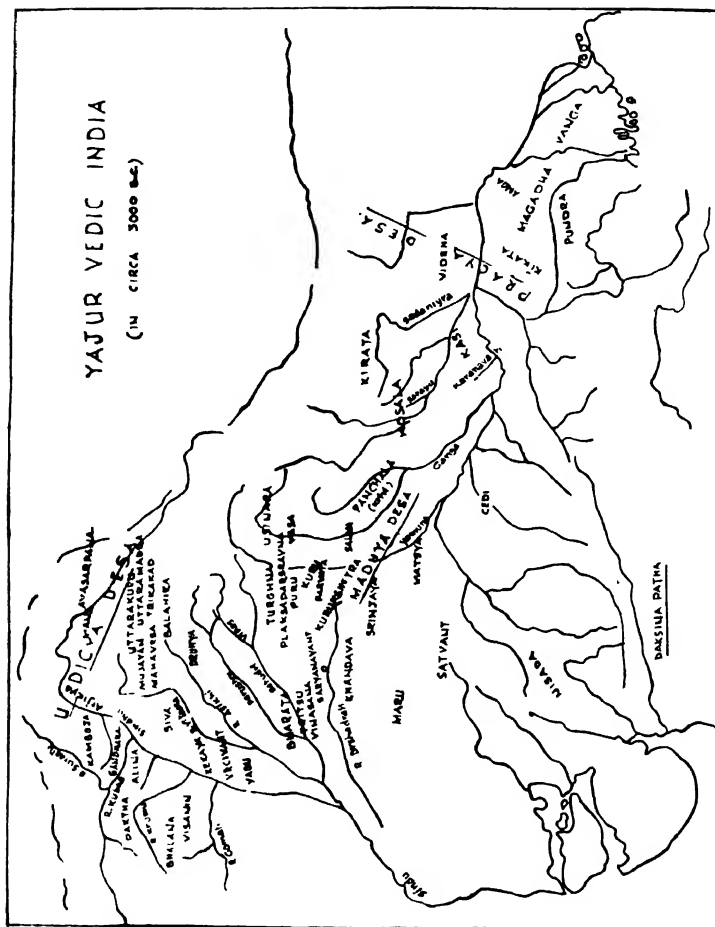
the earliest Vedas were composed. Without a script it would have been difficult to comply with the strict standards of the elaborate prosody which the Vedic Aryans developed in 5000 B.C. Even the compound letters would seem to require a pictorial representation. As I have said, the art of writing was well-known at the time of the Brāhmanas, which I have dated circa 2000 B.C. The Indus Valley civilisation is, from archaeological evidence, supplemented by C-14 tests, traced back to about the same period, at its final stages.

Unfortunately, there is a big gap between the syllabries of the Indus Valley civilization and the Brāhmi script which was the current literary coin in the 8th or 7th century B.C.* The orthodox Indian view is that the Brāhmi is descended from the pre-historic "Harappan" syllabries. There are marked similarities between the Brāhmi script and Indus Valley characters, although it is true that the latter seem to be a mixed syllabic ideograph, while the Brāhmi is essentially a semi-alphabet. Western scholars have traced a resemblance between the Brāhmi and the Aramaic scripts and from this, they have deduced that our ancients borrowed the art of writing from the Semites, a theory which well fits in with their pre-conceived notions about the age of the Rig Veda. But this verisimilitude may itself support another postulate, which is that, instead of the Aryans being the borrowers, they were the givers of the art of writing to the people in what is now known as the Near East.

We now come to the crux of the whole problem. If I have succeeded in fixing the Vedic chronology with good supporting evidence, then I would be justified in claiming that the Indus Valley civilisation is post-Vedic in age and essentially Aryan in character and not the outcrop of an obscure and unidentified tribe inhabiting Baluchistan and Sind. It is now evident that this civilisation is not confined to the Indus Valley but extends far to the south into Gujerat, and to the east into Rajaputana as the recent discoveries in Sourashtra and Rajasthan will indicate. This

* Panini was very familiar with writing. Buddha was taught both the alphabet and the numbers at the age of eight.

(IN CIRCA 3000 B.C.)



TO FACE PAGE NO. 21.

leads us to the important question as to "Who were the Aryans?" I claim that the Aryans were the original inhabitants of our own country, [although much of their pristine habitat has now passed over to Pakistan.] I would respectfully urge that it is erroneous to suggest that the Aryans ever came to India from an alien territory. The people who called themselves Aryan (or the noble, the elect) were autochthonous to the region which is now known as Punjab, Afghanistan, Sind and Kashmir; I would add to this modern Khotan (or Ghöstāna) and Eastern Persia, which are also geographically part of ancient Āryāvarta. The Aryan seed-ground (the Airyānā Bijo of the Avesta) is thus the region known as Sapta Sindhu, or the land of the Seven Rivers. If the Aryans came from anywhere else, they would have kept up memories of their migration and would have doubtless mentioned this in their hoary songs. There is no reference to any foreign country in the Rig Veda, which mentions particularly the Seven Rivers of the Punjab as well as the rivers in Swat and Afghanistan.* The theory of Bal Gangadhar Tilak of an Arctic home in the Vedas is now generally thought to be based on slight error, although his astronomical data** fixing the age of the Rig Veda at about 6,000 B.C. are doubtless very interesting. Greater Sapta Sindhu, in the broad sense, should be considered the original seed-ground of the Aryan race, at least at the time they broke out into impassioned poetry in the Vedas. They later migrated towards the Indo-Gangetic plain and ultimately the rest of the Indian sub-continent. This geographical shift resulted in certain curious transformations in the conception of Āryāvarta; in Rig Vedic times, Sapta Sindhu, was the holiest of holy grounds. By the time of the later Vedas and the Brāhmanas, however, the centre of gravity had moved very much eastwards. In the Yajur Veda, we do not find frequent reference to the seven rivers, or to the Kūbu (modern Kabul) or the Krūmu (modern Kurram) or to the Susartu.*** At the time of

* Especially the Kurram & the Kabul.

** Principally through the 'Nakshatras', commencing the Vedic year as affected by the precession of equinoxes. Jacobi dated the Rig Veda at 4000 B.C. on this basis.

*** Rig Veda, X, 75; the following western tributaries of the Indus are mentioned in the Sukta: Gomati (Gomal), Trishtema (?); Susartu (?) Rasa; Sweti (Swat); Kubu (Kabul); Mchattru (?)

the Brāhmanas and the Upanishads, the emphasis was very much on the middle country between the Yamunā and the Gangā as well as certain regions east of the Gangā. The Aryan cultural centre had shifted to the land of the Kurus and Pāñchālas and the Kōsalās and Vidēhas, i.e. modern Uttar Pradesh and Bihar. By the time the Smṛitikāras wrote their great treatises, it was established that Āryāvarta *par excellence*, was the region between the Gangā and the Yamunā “where the black antelope roamed freely.” The countries to the west of the Sindhu and Sauvira, or to the east of the river Karatōya, were definitely considered to be ‘misra’ or impure, probably owing to foreign intrusions of a racial character and the schisms proliferating in these areas. Gradually, however, as Aryan culture spread over the whole of what is now known as India, this narrow conception of Āryāvarta became somewhat modified. While western Punjab came to be looked down upon (particularly following a series of invasions from abroad), the whole country between the Himalayas and the Vindhya and between the two oceans was generally conceded to be fit for Aryans to live and for Vedic sacrifices to be performed.

Reference to another favourite geographical expression with the Indo-Aryans, viz., “Bharatavarsha” may also be made, at this stage. This expression occurs frequently in ancient Indian literature and is found in the inscriptions at Hathigumpha, of the second century B. C. Bharatavarsha, or the land of Bharata, son of Dushyanta, is defined in the Purānas as stretching from Cape Comorin to the source of the Gangā and one great commentator explains that Bharatavarsha covered the whole sub-continent as there was unity of language and culture from the Himalayas to Kanyā Kumārī.

I have explained how the Aryan home, which was originally in the Sapta Sindhu had gradually spread throughout the land, and how the geographical emphasis shifted from the Punjab to the Indo-Gangetic plain in the post-Vedic times. It now remains to be told how, apart from traversing the length and breadth of India (an area of over one and a half million square miles) the ancient Aryans carried their language, religion and culture far into other lands, both westward and eastward, in

pre-historic times and in the early centuries of the Christian era.* The Rig Vedic hymns portray a comparatively high state of civilisation. The people had domesticated the horse, the cow, the goat, the sheep, the buffalo, the ass, the camel and the dog and had even tamed the elephant; they had palaces built of stone, with a thousand pillars and hundreds of doors.** They had 'iron-forts' and they knew well the use of metals like gold, silver, copper, bronze and iron.*** Their warriors wore defensive armour, mail coats, golden helmets, and used weapons like swords and javelins, bows and iron-tipped arrows and spears. They had chariots drawn by horses and mules and wagons drawn by oxen, camels and elephants. Their fighting forces consisted of chariots, foot soldiers, cavalry, camel corps, and also probably of regiments of war-elephants. Their villages were governed by elected councils and the towns were ruled over by kings and noblemen who lived in some splendour, using extensively ornaments of gold and silver, pearls and precious stones, and wearing clothes woven out of wool, silk and cotton with gold threads worked into them. They were accustomed to the use of coins of gold and silver, although they practised also trade by barter **** They had ocean-going ships, some manned by 100 oars and they carried on brisk trade, in-land and overseas. They had fairly comprehensive civil laws and they knew money-lending, collected interest and had property in land. They had a well-organised social life with clearly defined regulation of inheritance. The criminal laws were of a wide range and, on the

* Such a conception of Aryan cultural progress would be naturally in opposition to the popular European theory of an Indo-Germanic origin of the race, or one connected with the Russian steppes.

** Says Wilson: (Introduction to his translation of the Rig Veda, Vol III. page xii) "Cities with buildings of some pretence must obviously have been no rarities to the authors of the hymns of the Rig Veda." Panini mentions hundreds of city states. The Greek writers were astonished at the number of cities in North West India. Between the Jhelum and the Beas alone, they counted five hundred. Said Megasthenes, "Their number is so great that they cannot be stated with precision" (Mc Crindle- Page 209.)

*** "Iron was used earlier in Northern India than the Southern... It is referred to in the Atharva Veda, which is not later than Circa 2500 B. C." (Dr. R. K. Mookerji, Hindu Civilization, p. 12.)

**** There is mention of a present of ten purses to a rishi (Rig Veda. VI, 4. 4 (22) ; Dr. R. K. Mookerji considers the nushka to be a Vedic coin.

whole, humanitarian. Their women held a high and dignified position in domestic and social life. They had a lofty code of ethics which enjoined truth and probity, reverence for the aged, the guest and the teacher. They had assemblies constituted through popular elections, clubs for discussions, elaborate Vēdis or sacrificial halls for their rituals, and a highly developed language, which dealt with equal felicity about sublime philosophic speculations on life here and in the hereafter, as well as with the vexatious problems of mundane life.

Such was the state of civilization in Sapta Sindhu round about 3000 B.C. Could this civilization have really come from a foreign country, whether it be the Black Forest of Germany or the dreary grass lands of Russia in Asia? Nowhere in the world at about that time was there any such civilization. In Europe and Russia the bulk of the people were living in the Stone Age as late as 1000 B. C. and even by 500 B.C., they were not aware of the existence of iron.* The Germanic and Slovanic peoples were nomadic tribes who were ignorant of any metal, with the possible exception of copper. They dwelt in huts or under branches of trees in summer and in circular pits dug in the earth in winter. They were clad in skins sewn together with bone needles and were able to count upto 100 only. Their agriculture was of the most primitive nature and they were wholesale polygamists, who practised human sacrifice. They were not strangers to cannibalism, a vice which persisted in Europe till about 900 A.D. in stray places.**

I suggest that the truth of the matter is that the original home of the Aryans was in the region of the Himalayas and the seven sacred rivers and it is from this area that they travelled eastward and westward in several waves and migrations from the pre-historic to the early Christian times. Somewhere in the third millennium B.C., a group of Aryans broke away from the main

* The use of iron tipped spears and arrows by the Indian contingent in Xerxes's army came as a novelty to the Greeks.

** See Taylor "Origin of Aryans" (pp. 132-33). Strabo states that, in his time, the inhabitants of Ireland killed and ate their aged parents!

stock and migrated towards Persia and regions further westwards.* The events connected with this great schism are shrouded in the darkness of antiquity, but certain broad facts are discernible from the evidence of both Sanskrit and Zoroastrian literature. In a way, the Brāhmanas supply the key to the break-up of the ancient Aryan clans. The word, Asura, in the first part of the Rig Veda denoted someone strong, powerful, noble and victorious.** It was never a term of opprobrium, as it became later in our sacerdotal literature, and Indra himself was not infrequently called an Asura. Even in the later hymns of the Rig Veda, the term had not taken on a pronouncedly dubious connotation. At the time of the Yajur Veda and the Brāhmanas, however, Asuras had become the habitual enemies of the Aryans and were supposedly in eternal conflict with the Dēvas worshipped by the rishis. The Satapata Brāhmaṇa gives some graphic descriptions of this conflict. To quote : "The Dēvas and Asuras, both of them, sprung from Prajāpati, were contending for superiority. The gods vanquished the Asuras. Yet they harassed them again. 'By fleeing northwards, they escape us' exclaimed the Dēvas". The episode of Vishnu appearing as Vāmana, or a dwarf, is somehow connected with this gigantic duel between the two Aryan groups. Shorn of encrusting legend and mythology, it is clear that the episodes described in the Brāhmanas and the ancient Purāṇas illustrate the antagonism between the Dēva worshippers and the schismatic Aryans who later evolved the Zoroastrian religion.*** As Max Muller observes, "Zoroastrians were a colony from northern India. A schism took place when the Zoroastrians

* "The antiquity of the Rig Veda is now established by certain inscriptions in the Hittite capital of the XV century B. C.... The Rig Veda itself must have originated earlier to have its culture migrate from India to Mesopotamia (and Anatolia) in that early age. The Rig Veda cannot be later than 2500 B.C." (R. K. Mookerji in Hindu civilisation, vol. I)

** e.g. Rig Veda, III, 55 (II) "Mahad Devanam Asuratvam Ekam : great and unmatched is the might of the gods"

*** Sukracharya is supposed to have spearheaded the schism and supplied the Asuras with brain power.

migrated towards Persia.**” He points out that this was self-evident from the striking similarity between the two communities in language, religion and mythology; the same gods, unknown to any European nation, were worshipped or denigrated under the same name, both in Sanskrit and the Avestan. The fact that the most sacred deities enshrined in the Sanskrit language were converted into apostles of evil in the Vendidad, served merely to emphasise the violence of this gigantic cleavage. The break-away of the Asura worshippers, the followers of Jerath Twastra (Zarathushtra) points to another great historical fact, viz. that before the Zoroastrians settled down in Persia and Arachosia, they went far to the north, presumably under physical pressure from the Dēva worshippers. The Vendidad mentions a number of places as the roaming ground of the Zoroastrians before they found a stable home. The Ariyānā Bijo, or the seed ground of the Aryans and the Sapta Sindhu, are of course specified. In addition, the following places find prominent notice in the Avestan lore. Suganda (Sogdiana) Mēru (Margia), Musaya, Sarayū, Vellareda (Kabul), Gāndhāra (Khandahar), Arachosia (Haruth), Chavera, Sethujanth (perhaps the region of the Caspian sea) etc. In all, 16 countries are enumerated as the holy lands guarded over by Ahura Mazda, the Zoroastrian counterpart of Indra, or Asura Mahata.**

It is mentioned in the Vendidad that the Sohsyavants (or Head priests) revealed the great Asura religion to the common people; and these counterparts of the Vedic rishis became the fore-runners of Zoroaster himself. In their doctrines, the familiar gods, or the Dēvas, became objects of contempt; for example, Āryamān, who is equated with Savitār or Prajāpati in the Veda, became the lord of the Nether World, whose surrogate was Satan himself. Yama and Yamī, to whom was assigned the guardianship of the lower regions in Vedic lore, became the prime deities of the Zoroastrians. The same inverted ideology is evidenced in

* “Science of Language” Vol. II, P. 279 (5th edition)

** Dr. A. C. Das (Rig Vedic India) derives Ahura Mazda from Asura Maghava.

other aspects of fire-worship. The Zoroastrians execrated not only the "wicked and false Dēvas," but also the Sōma sacrifice which was the essence of exalted Vedic ritual. There are violent attacks on the Sōma cult in the Vendidad and the fire-worshippers substituted the Sōma plant by twigs of the pomegranate tree, but the word Sōma (pronounced Homa in Persian script) remained right through in the texts along with some of the characteristic yagna ceremonies. Later on, there is evidence that Zoroaster reverted back to the use of the Sōma plant, as one of the gāthas of Zarathushtra has praised the Sōma plant and its home, the Himalayan mountains. But the *odium theologicum* against the Dēvas remained. The third gātha of Zoroaster (which corresponds to our Gāyatri in a way) contains the following:-

"I am a follower of the Asura.

I worship the Asura.

I hate the Dēvas.

I hate the Dēva worshippers".

Darius, the Great, records this gātha in one of his well-known inscriptions.

We have evidence of the wandering of the 'Asura' groups towards the north, till they reached a place where the sun rose only once a year and year seemed as a day.* It seems probable that a large batch of the seceders migrated from Ariyānā Bijo to the circumpolar region. This is borne out by the fact that the Sanskrit language had spread as far as Latvia and Lithuania; it is contended that, of all European languages, the Lithuanian is the closest to Sanskrit and to the Avestan.**

There is a reference in Avestan literature to a heavy invasion of Ariyānā Bijo by ice-frost and to the deterioration of the genial

* Vendidad : Fargard II

** Even today, the study of Sanskrit is a treasured objective among the Finns and the Lithuanians and the legendary gods of these people can be mostly identified with Vedic deities. It is reasonable to infer, therefore, that a branch of the ancient Aryans who had broken away from the Soma cult, got settled in the Baltic Sea area.

climate of Sapta Sindhu by "pernicious heat". If one places Ariyānā Bijo in Khotan and the lower Pamirs, there is evidence to show that about 5000 years ago, there was a severe frost, followed by serious drought, which destroyed most of the living creatures, not only in that area, but also in adjacent China. This great natural cataclysm seems to have affected the local population with such a heavy incidence of mortality that, even after a lapse of thousands of years, numerous human and animal skeletons can now be seen strewn all over the dreary and forbidding landscape.

Enough has been mentioned supra, to show that the break-away of the fire-worshippers from the main Aryan stock carried the Aryan language and civilization to far off lands in the West. The close similarity between the Lithuanian language and Sanskrit has been indicated. A similar connection between Latin and Greek on one side, and the Indo-Iranian language on the other, is now almost universally admitted. The Slavonic languages also bear a close resemblance to the Indo-Iranian speech as they formed a transition between Sanskrit and the Tuetonic tongues in the same way as Greek was the bridge between Sanskrit and Latin.*

The study of another venue of culture, language and civilization which originated from Indian shores and travelled westward, is as interesting as the march of the Aryans towards Europe by land.

Some Indologists** believe that the Chaldean civilization was essentially Aryan and that the Chaldeans were a branch of the Cholas who had established themselves in South India from very ancient times and got accultured and uplifted by the incoming north Indians. Another school would suggest that the Punic (or the Phoenicians) were but a trading community from Aryāvarta, who are referred to in Rig Veda as Panis. In several

* In a subsequent chapter, this theme (or the linguistic argument of India being the original Aryan homeland) is developed in detail.

** Dr. A. C. Das, for instance, in his book 'Rig Vedic India' P. 217.

hymns of the Rig Veda, the Panis are opprobriously described as mean and greedy and prone to thieving and cattle-lifting ; and there are indications that they were gradually driven out of the Aryan home for their poor ethical standards and dubious commercial practices. It is possible that these people travelled westward in the ocean-going boats, with which the Rig Vedic Aryans were familiar, first to Chaldea, and later on, to the shores of Asia Minor. One of their principal cities, Troy, was named Ilium, which bears a strong resemblance to the Sanskrit word 'Ilam' meaning earth or the place of domicile.* The close affinity between the Greek language and Sanskrit on the one hand and Latin on the other, makes it a safe assumption that the Sanskritic speech travelled westward, probably by sea, to those countries, some where prior to the destruction of Troy which is said to have taken place prior to 1000 B.C. Some confirmation, for this theory, is found in the fact that words of Sanskrit derivation are found in the neighbouring Semitic languages also, like those for monkey, pea-fowl, guitar, sapphire, etc. Resemblances between the ancient legends of the Hebrews and of the Aryans, (particularly the story in the Old Testament connected with Jonah and the Whale, which seems to have been copied from the Vedic legend of Manu and the big Fish) lend colour to the theory of an Aryan acculturation of the Near East. I suggest, therefore, that a great wave of Aryan migration by sea travelled westward sometime near 3000 B.C. Further archaeological researches in India and elsewhere will, let us hope, bridge the big gulf which exists in the chain of evidence supporting this suggestion. Elsewhere, in this book, the various topics germane to this theory are developed in more detail.

I had mentioned earlier that there was evidence of Aryan influence in Egypt. In historical times, it is known, that there were Aryan priests in the courts of the Ptolemies of Egypt, ministering at the temples and lecturing at the schools of Sanskrit learning. Apart from these established historical contacts, there

* The Aryans called the Kashmir Valley 'Ila' (i.e. their original homeland) in their legends. (Ila bhumi) To the Greeks, Mount Ida or Ila, was the residence of Zeus.

is evidence of extensive cultural and commercial intercourse between Egypt and India in the ages prior to recorded history. Fortunately for history, the hieroglyphics of the Egyptians have been deciphered and we now know much of the culture, thought and ways of life of this ancient race going back to 3000 B.C. Here again, Indo-Aryan influences are clearly discernible. Some of the Egyptian gods intimately resemble their Vedic contemporaries, as I have demonstrated elsewhere in this book. The chief Egyptian god was called Ptah (the heavenly father) who would correspond to our Dyaus Pitar, whom the Greeks worshipped as Zeus Pater and the Romans as Jupiter. Then we have Hathor or Sathor, who bore close similarity to our Savitār*. The Egyptian deity known as Horus or Sorus, is evidently the equivalent of our Sūrya. The king himself, when he was alive, was called Pharaoh which would equate with the Sanskrit expression, Para. (Para in Sanskrit means excellent, or superior, as opposed to apara, meaning inferior). The king was looked upon as a superior being with such attributes of divinity that he was not only obeyed as a living God, but was mummified and venerated as Osiris. Osiris was responsible, in Egyptian mythology, not only for the creation of life but was also particularly identified with the flood-waters of the Nile and the cultivation of the main crop i.e. barley, which was also the chief grain of the Indo-Aryans. [His chief city was called Heliopolis, which is the Greek way of spelling Sūryapura]. The Egyptian tradition of kingship is very similar to that depicted in the ancient Brāhmanas. The former holds that the gods did not acquire their divinity until they had gained access from this world to the sky.** Similarly in the Rājasūya sacrifice, the king attains

* In the Greek language, as also in the Zend Avesta, the Sanskrit 'S' became 'H'. For example, Sapta Sindhu became Hapta Hindu in the Avesta; and in Greek, Sindhu became Hindu and Sarpa, harpa. [The Harpies were really 'sarpies']

** It has been suggested by Edward (The Pyramids of Egypt) that the Pyramid itself was a ladder to the sky as the following funerary text in one of Papyrus indicated:- "I have trodden those thy rays as a ramp under my feet. ... Heaven has strengthened (for me) the rays of the sun that I mayest lift myself to heaven as the eye of Re." Similar ideas are found in Vedic funerary mantras; for example, the eye of the deceased is expected to ascend to the Sun (Suryam the Chakshuh gacchantu. R. V. x 15)

सूर्यं ते चक्षुः गच्छन्तु ।

the sky during his conscreation by climbing the 17 sided-post which is supposed to take him to the nabha or the sky. The king proclaims, after ascending the top of the post, that he has reached the world beyond the sky and has become the son of Prajapati. Similar ideas were found profusely illustrated in the sacred writings of Egypt, where the king was equated with the Creator and the Designer of the world. Barley,* as we know, was the principal grain known to the Vedic Aryans and used in oblations to the manes (vide also the famous Anna Sūkta); in Egypt also it was the principal crop. Khufu might be a scion of the Kuru race. Ramesses (or Rāma-essu as he was known in the hiero-script), the divine offspring of Maat Meri Ammon, has been compared with Rāma Īsa by some Indologists. Like the Aryans, the Egyptians were wedded to agriculture and were so much indebted to their rivers, as to deify them, as was the case in India. In pre-historic times, the Egyptians knew the use of gold and copper, but not iron which was introduced by the Hyksos in the 16th century B. C. They used the plough, however; in fact, one of the earliest pictures represents the king as plying the plough and having the seed winnowed in his presence. The Aryans, also, were familiar with krishi or cultivation and the word 'Ārya' itself is supposed to have been derived from the word 'Ar' which means the plough**.

* "The barley found at Mohenjo-daro is of the species found in the pre-Dynastic graves of Egypt. It is believed that both barley and wheat are of Asiatic origin." (Dr. R. K. Mookerji - Hindu Civilization I-P. 15). Prof. J. B. S. Haldane has argued with great technical skill, that "bread wheat originated from a centre near the Punjab." (Inequalities of Man etc. - P. 47).
 अवोसि भान्वराजोसि we say in our Sraddha mantras.

** Agriculture was an honoured profession in ancient India. In the later Smritis, even Brahmins were allowed to engage in agriculture, for want of a better vocation, but subject to certain restrictions as below :

Parasara (8th century B. C.) for instance says : "(For a Brahmin) the proper number of oxen to be yoked to the plough is eight, six being middling; four are yoked only by the cruel and two by those who sacrifice the lives of their oxen;the sin of having a plough share tipped with iron even for a day is equal to the sin of fishing for a year". The Rig Veda mentions teams of oxen yoked to the plough (VII 6 (48); X 101 (4)). The plough land was called urvara; the ripe grain was cut with a sickle, and threshed on the khala under the feet of cattle. (Rig Veda, X, 8.) Water for irrigation came from rivers or lakes through canals (R. V. III, 45; X, 99.)

What is most interesting is, that some of the Egyptian kings started calling themselves Children of the Sun, or Sūryavamsa. The first king who called himself so belonged to the family settled at Heliopolis or Sūryapura and, the date is fixed circa 2500 B. C. In India, also, we have a celebrated Sūryavamsa to which Ikshvāku and his great descendents, Dilipa, Raghu and Rāma belonged. This family is traced to Vaivasvata (or 14th Manu), whose date, perhaps, would be 3000 B. C. The Aryan-Egyptian parallels can be traced further. As a member of the Solar line, the Indian king was identified with a series of Solar deities, viz., the Ādityas, (or the sons of Aditi) who was herself the Sacred Cow, as in Egypt. In Egypt, the Pharaoh placed the breath of life into the Nile; in India, the Rājā was often identified with Varuna, the Lord of the Waters.*

The resemblances between the ancient Aryan and Egyptian religion and culture are so remarkable that some Egyptologists have presumed that the culture must have travelled from Egypt to India. In supporting this theory, they have, in some measure, exaggerated the age of the Egyptian civilization; to the same extent that they have depreciated the antiquity of Aryan culture. I have attempted to show, here, that this theory cannot hold good in as much as the civilization of Sapta Sindhu is considerably anterior in date to the Egyptian. The earliest evidence of civilized life in Egypt is now put at 3200 B. C., while we have seen that the culture depicted in the Rig Veda should be perhaps a thousand years older. I suggest that there is a strong presumption in favour of the other theory, which I have ventured to put forward viz., that if there had been any borrowing of language, culture, or religion, it would have been by the Egyptians from India. It is clearly demonstrable that in historical times the Nile Valley obtained certain hallmarks of progress, like the equine

* To give only one instance; when some one had to celebrate the Agnishtoma sacrifice, he had to ask the king for the grant of a sacrificial ground with these words "Oh God Varuna, give me devayajana" (i.e. land for running the ceremony).

mount, the wheeled chariot, the potter's wheel, and iron implements from the Aryans of Anatolia and the Lebanon (the Khetas and the Mittanis). It may just as well be a fact that the same race, along with their culture had travelled, though not by the land route, to the Euphrates Valley and to Egypt, at an even earlier period, now lost in the mists of time.*

In the following pages I have tried to depict the saga of the Indo-Aryan people in its true perspective. Their story has been distorted by the rapturous acclaim which the discovery of these people received in the last century at the hands of European scholars (particularly German) who thought that they had successfully located the original home of these *herren-volk* (with their splendid civilisation** and their wonderful poetry) near about the Black Forests of Germany. The subsequent revulsion of feeling, induced, partly by influential Semitic reactions, and partly by strong antipathy to the racist theories of German National Socialism, swung the pendulum too far the other way. Doubts were begun to be cast on the very existence of an Aryan people, at any rate of the size, purity, and importance, formerly attributed to them by scholars. Besides relegating their homeland to the barren and obscure corners of South-eastern Russia, the tendency became noticeable to 'de-bunk' the culture and attainments of this ancient people, if not actually to denigrate them. The nadir of disparagement was probably reached by Woolley, when he described the Rig Veda as the record of the destruction, in 1200 B.C., by a semi-barbarous nation of one of the

* In this connection an interesting bit of evidence has recently come to light. A Danish archaeological expedition has unearthed in the island of Bahrein, near the Persian Gulf, a seal stone believed to be about 5000 years old, similar in design to seals of the same period found in the Indus Valley and in Mesopotamia. A spokesman of the expedition has averred that this find proves beyond doubt the theory that the Sumerian civilization originated in the Indus Valley and arrived in Mesopotamia by way of Bahrein.

** Says Wilson "It is indisputable that the Hindus of the Vaidik era had attained to a high stage of civilization, little, if at all, differing from that in which they were found by the Greeks at the time of Alexander's invasion" (Introduction to Vol. II of his Translation of the Rig Veda)

great civilizations of the ancient world (i.e. the Indus Valley culture).*

Apart from its dubious historic accuracy, Woolley's verdict on the Indo-Aryans is eminently unjust. Far from destroying any great culture, the Indo-Aryans specialised in creating new ones, where none flourished, and enriching those which already existed. In terms of human progress, they made the deserts bloom : they induced the bare patches of the earth to shine with the rich verdure of their own culture. Their warm glow lit the most unexpected dark corners of the world. They uplifted the eastern lands, literally, from China to Peru. In the west there was little of Europe which had not felt their benign touch. And wherever they went, they were welcomed with open arms, and the natives felt pride in claiming kinship with, if not actual ancestry from, these kindly strangers. To China they went as honoured missionaries ; to Tibet as invited Royal guests and as educators ; to Burma and the Far East they journeyed as welcome traders, priests, rulers and administrators ; to Polynesia they travelled as hardy colonisers of empty lands ; and finally they came to Peru as the Elite who set up the very perfection of a Welfare State ever seen on this globe. Every where they were joyously received by the locals ; the chiefs were delighted to give their daughters in marriage to the learned Brāhmanas and the common fry were glad to sit at the feet of the *śrījās* and learn the arts of a good life and high spiritual thinking. No force was ordinarily employed by the incoming visitors ; their velvet gloves hid no mailed fist. Kaundinya's spear and Agastya's flying arrow, were more symbolic than real. The Indo-Aryan annals are not stained by those acts of cold-blooded ferocity which are found in such profusion in the record of the European adventurer, and his American cousin. Alexander set rivers of innocent blood flowing on either bank of the Sindhu, simply because the sturdy tribesmen living there committed the unpardonable crime of loving their own freedom and of refusing to bend the knee before insolent and drunken

* "The Rig Veda is the epic of the destruction of one of the great cultures of the ancient world." (P. 389. History of Mankind, Cultural and Scientific Development Vol. I Pre-History and the Beginnings of Civilization).

In fairness to Sir L. Woolley, I attach a Note giving a full resume of his views, vide Note I to Chapter I.

might. The Romans delighted to fill their chronicles with systematic and implacable campaigns of conquest and extermination of the so-called barbarian. In this book the reader will see how the Dons in the New World, the British in New Zealand, and the Americans in the Sandwich Islands, dealt with nations who were so unfortunate as to dwell in salubrious lands or possess material riches which the greed of the white man could not resist. The Indo-Aryans never believed in colonial exploitation, in fleecing the luckless natives of their wealth so that the ruthless adventurers could go home and live in undreamt of luxury, Nabob-fashion.* To the Aryan colonisers their new lands became for ever their adopted home; if ever one of them nostalgically harked back to Āryāvarta, it was, perhaps, to spend the evening of his life, "on the banks of the Jannavi" in pious austerities.** It is true that the Indo-Aryans were a touchy race and somewhat conscious of their superior attainments. But these sentiments never reached the stage of 'apartheid' and mass persecution of any less favoured community. In war, they developed a high standard of chivalry, backed by a code of combat-ethics which has not been matched any where else in the world.*** For peace they evolved the Niti and the Dharma Sāstrās, the famous Institutes of good and righteous conduct, whose glowing message they spread far and wide over the globe. We hear of Manu-Niti not only in the Far East and Indonesia, but also in the Pacific Isles and in the far-off Americas. While there was, in the Chola period, a Manu-Niti-Mannan in South India, a less known counterpart of his flourished in the other Hemisphere, in Mexico,

* Students of Indian History may remember that an impecunious product of the London slums like Clive, grew so richly ostentatious that, during his first return to London, he ordered 600 shirts for himself!

** Or perhaps to draw instruction and inspiration from the religion of the mother country. For instance, King Sivasoma of Kamboja has recorded that "he went to Aryavarta to study, as a direct pupil of Bhagavan Sankara himself, at whose feet the heads of sages were bent in reverence."

*** Says A. L. Basham "Righteous conquest was the ideal which Hindu kings were expected to follow and it is evident that they usually did..... It is doubtful if any other ancient civilisation set such humane ideals of warfare". Greek rule was based on force and violence. Two thirds of the population of Athens consisted of slaves, Thucydides puts the following words in the mouth of Pericles: "Our Empire is based on our own strength rather than the goodness of our subjects. The strong do what they can."

just prior to the Spanish conquest, whose story I have told elsewhere in these writings.

Taken by and large, the contribution of the Indo-Aryans to the progress of mankind (material and spiritual) is *non-pareil*. It is true that much of their greatness is now lost in the mists of time and in the detractions of prejudice, but enough of it remains to cast a halo of loving regard around this pristine race which played such a vibrant and heroic role on the stage of ancient history. The Aryan song is long over but its beauty still lingers over the earth ; while the music had played its last sweet note centuries ago, the melody of it still haunts the human ear.

No wonder then Sir Walter Raleigh placed his "Terrestrial Paradise" in the Himalayan valleys, particularly lovely Kashmir, "the common source of the Jehum (Jhelam) and the grand rivers, where the ficus Indica sacred to the Lord is abundant. India was the first planted and peopled country after the Flood." (Raleigh : History of the World). And it is also little surprising that Milton should follow suit, in famed classical verse ;

" BOTH TOGETHER WENT " *

Into the thickest wood ; there soon they chose
The fig tree ; not that kind for fruit renowned
But such as this day to Indians known
In Malabar or Deccan ; spreads her arms
Branching so broad and long that in the ground
The bended twigs take root and daughters grow
About the mother tree, a pillar'd shāde
High over head and echoing walks in between.
There oft the Indian herdsman shunning heat
Shelters in cool and tends his pasturing herds"—

(Paradise Lost—Book IX)

* Adam and Eve ; Milton identifies the 'Tree of Knowledge' with the Banyan tree or ficus Bengalensis — Col. Tod thinks that the Biblical Ararat is a mis-spelling of Aryavarta. Adelung, the father of modern comparative philology, called Kashmir the cradle of the human race and the Paradise of the Hebrews. [In the Old Testament, the garden of Eden is located at the head of the Persian Gulf, by 'J', the author of the Part II of the Book of Genesis].

NOTE I TO INTRODUCTION

SIR L. WOLLEY'S VIEWS ON THE RIGVEDIC ARYANS.

In the book 'Beginnings of Civilisation' Vol. I P. 784 Sir L. Wolley observes: "It (the Indus Valley Culture) seemed wholly alien to India and unrelated to the development of Indian history. It is true that the Aryan invaders completely destroyed that urban civilization which was so much at variance with their ideals of life. Indra was the destroyer of cities. Aryan victory seems to have involved wholesale massacre".

To round off the learned author's views I extract below his further comments on the subject (Pp. 405 - 407 *ibid*).

"Since there are differences of opinion on this subject something should be said regarding the alternative views. Some Indologists hold that the Rig Vedic literature, and *a fortiori* the Rig Vedic Age, go back beyond the twelfth century B.C., and that the Aryan Indians were, by that time at least, a highly civilized people, as is shown by the character of their literature and religion. It is historically true that southern India was, by the third century B. C., conquered by Aryan Indians and dominated by Brāhmanical culture, and that the conquest had been preceded by a religious infiltration which resulted in the establishment of Vedic schools in the south. The earliest hymns of the Rig Veda show the Indo-Aryans as established exclusively in the north-west of India and in eastern Afghanistan; it is argued therefore that, assuming the Vedic schools in the south to have been established in the seventh century (which is a pure assumption), five hundred years is a ludicrously short time to allow for the extension of Aryan domination over the rest of northern and central India, so that the Aryan occupation of the north-west must go back far beyond 1200 B.C. The many different strata in the Rig Vedic hymns prove that the period in which they were developed must have stretched over very many centuries, and reckoning back from the earliest Buddhist literature (which presupposes the Veda) and allowing for the vast lapse of time required by oral

tradition for the earliest hymns to have taken shape in the Vedic schools and to have been compiled into a Samhita or 'Collection', those hymns must be assigned to a date before 1200 B.C. Further, since the grouping of the Aryan gods in the Mittanni texts from Bogaz Keui, with their particular forms of names, can be traced elsewhere only in the Veda, it is argued (a) that these are Indian Vedic deities, and (b) that the Mittanni leaders were immigrants from India, from which it follows that the Aryans had been established in north-western India considerably earlier than 1500 B.C. In view of this overwhelming evidence that eastern Afghanistan and north-west India were occupied by the Rig Vedic Aryans from about 2500 B.C., either their civilization was for a long time contemporary with the Harappa civilization or those Aryans, instead of having destroyed the Harappa civilization, were actually its authors.

"The view adopted in this volume is that the Rig Vedic hymns (regardless of the late date at which they assumed their present form) do embody early elements, as early as 1200 B.C. probably, in which the Aryan invasion of north-west India is rather vaguely remembered, and that the actual invasion took place somewhere around 1500 B.C.; the 'Vedic Age' may be said to have started at that time, the literature comes later, and the type of literature represented by the early elements in the hymns does not imply any high degree of material culture.* The

* Against the view of Woolley, I cite below the opinion of L.D. Barnett, who is, as rule, very critical of the Hindus and their civilisation.

"The civilization of the Vedic Aryans was simple but hardly more simple than that of many villages of North India today. (1910 AD) Their fields were watered by canals or wells of the modern kind. They had considerable skill in the art of the smith, manufacturing weapons of war and instruments of peace, from iron, copper and perhaps other metals. They wore fabrics of wool and cotton. The wealthy enjoyed the luxury of beds on frames, quite in the modern style. Even the food of the poor consisted, as today, to a large extent of honey, milk, fresh or clarified butter, curds, grain (barley and rice), sesam, beans, sugarcane and other vegetables. When they could obtain it, they ate flesh without scruples. The rich rode on horses and chariots and lived in lordly ease. Most of the vices of advanced civilisation were present, e.g. prostitution and gambling" (Antiquities of India—P. 6).

Harappa civilization was non-Aryan and was destroyed by the Aryans (there is indeed no other possible explanation of its destruction) who were a non-urbanized people and semi-barbarous.

“Had my period gone down to 500 B.C, I should have treated the Rig Veda at length; but with 1,200 B.C. as the terminus, that would have been wrong. The Rig Veda was certainly not composed in its present form until much later, and it is impossible to say what stage of culture had been reached by the Aryans at 1200 B.C; a description based on the Rig Veda and applied to the period 1500-1200 B.C would be an anachronism unsupported by any evidence whatsoever; the culture reflected in the Rig Veda is itself that of a later period, and of the ‘gradual evolution’ of that culture we can speak only in a summary (which would be most in place if given for the fourth-third century B.C); the poem does not help us to trace its evolution in dated steps.”

NOTE II TO INTRODUCTION

INDIAN TRADITIONAL CHRONOLOGY

In every prominent land, with a long history behind it, tradition plays a large part in providing the material for delineating its ancient story. Historians have generally treated such traditional material with respect in other countries (e.g. as in China) even though there was inadequate confirmatory evidence of a direct type, from other sources. In the case of India, however, tradition has been systematically scoffed at by foreign scholars. Taking the cue from early Indologists like Macdonell and Keith, historians, both foreign and indigenous have generally fought shy of accepting the evidence of the great Epics and the Purānas even at partial face value, exaggerating their inconsistencies and over-discounting the patently historical material in them, on the plea of myth-mongering and interested invention. Pargiter was an exception to this rule as he realised the historical value of the traditional material as contained in the Purānas and the Kāvya, despite their all too evident shortcomings. He set comparatively less store on the Vedas as a source of ancient Indian history, especially since the Vedas were primarily canon and liturgy and not domestic history, or essays on contemporary economy.

Keith even called the Purānās “Kshatriya—inspired tradition”, as against the Vedas, which were allegedly Brāhminical in spirit, and he preferred the latter as being more reliable. But this theory of caste-inspired distinctions, sponsored by Keith, is not based on fact. Many Vedic seers were Rājanyas; on the other hand the authors of the Purānas and the Kāvya were all Brahmins. (The suggestion that the Purānic Sūtas were non-Brahmans is incorrect; they were mostly venerable rishis employed as “heroic bards” by the royalty). In India there was nothing like a

Kshathriya tradition *versus* a Brāhmana tradition.* The Purānas take pride in their Brāhminical authorship and style themselves as the "Fifth Veda".

While it is a regrettable fact that the Purānas between themselves are not always consistent and are, not infrequently, at variance with Vedic texts, "there is no irreconcilable contradiction between the Vedas and the Purānas". Some of the genealogies in the Rig Veda can be broadly fitted into the Purānic lists and even where there are gaps and contradictions, some sort of mutual rationalisation and correction of the two sets of evidence can be successfully attempted. Even where the Vedas are silent, it will be improper to reject the testimony of tradition. However, a note of caution has to be sounded in this connection and it is this. The similarity of the Royal names as mentioned by the Vedas and in the Purānas should not be always taken as indicative of identity. For example the Puru or Purukutsa mentioned in the Vedas has nothing to do with the Puranic Puru, son of Yayāti. Similarly King Sudās of the Tritsu people, who figures as the hero of Dasarājna hymns in the Rig Veda, has probably no identity with the King Sudās mentioned in the Purānas as the successor of Sri Rāma and would therefore have reigned about 1900 B. C. (vide below).

After making a correction of the Purānic data with reference to the Vedas, the following chronology of the main events of Indian pre-history have been worked out by our scholars.**

* Similar attempts of European scholars to read into the Upanishads an anti-priestly reaction on the part of the Rajnyas, also seem wholly misconceived. vide the learned comments of Dr. P. V. Kane at p. 107 of his *History of Dharma Sastra*, cited below:

"The conclusion that is sometimes drawn by certain writers that Kshatriyas or kings were the pioneers in brahma-vidya cannot be accepted as correct. The germs of the philosophy of the Upanishads are seen in the later hymns of the Rig Veda, in the Atharva Veda and in some of the Brahmana treatises. The Upanishads are full of Brahmanas who independently propounded various aspects of brahma-vidya and there is no reason to suppose that the few Kshatriyas referred to as masters of the vidya were the only persons who first attained to that position."

** For much of the material here, I am indebted to 'The Vedic Age' (Dr. Pusalkar).

The beginning of the Kaliyuga (3102 B.C.) is taken to represent the first year after the Great Flood and the beginning of the reign of Manu Vaivaswata, the first monarch of Āryāvarta in local tradition.† The basis for this calculation is as follows :

(a) The Purāṇas mention 26 kings as having reigned between Mahāpadmananda and Ādhisimakrishna, the grandson of Janamējaya. Taking Nanda's date as 382 B. C. and assuming an average regnal period of 18 years per king, we reach back to 850 B.C. (26×18 plus 382).

Allowing another 100 years between Ādhi and the Pāṇdavas, the date of the Mahābharata war is fixed at 950 B.C.* This date however does not accord with that of the Purāṇas which categorically state that a period of 1050 years elapsed between the birth of Parikshit and the accession of Mahāpadmanandha, thus putting the great War in 1432 B.C. (1050 plus 382)**. Curiously enough this date (1432 B.C. for the great fight) coincides with Vamsāvali list of Upanishad teachers (as interpreted through an average life of each teacher). Assuming 1440 B.C. (in round figures) and taking the traditional figure of 95 generations as elapsing between the War and Manu Vaivaswata, we reach back to 3150 B.C. (95×18 plus 1440), as the date of the Great Flood. This latter date accords remarkably closely to the astronomical date of 3102 B.C. for the commencement of the Kali Era, which, has been made to synchronise with the battle at Kurukshētra in the great Epic.

† I have elsewhere indicated that the Great Flood must have occurred between the last date of the composition of the Rig Veda (4000 B.C.) and the date for the Atharvan i.e. 3000 B.C.

* The calculations are Pargiter's.

** I have indicated elsewhere that there was a total Solar eclipse (visible in Upper India) in circa 1440 B.C. Such an eclipse figures largely in the Mahābharata descriptions of the War. Dr. R. K. Mookerji (Hindu Civilisation I p. 152) has elaborately argued for a date of 1400 B.C. for the Great War. He allows for 23 generations between Buddha and the War and reaches the date of 1415 B. C. [$24 \times 34 + 623$]. This somewhat tallies with the other data which allow for an interval of 1050 years from the War to Mahāpadmananda (362 B.C.)

If Manu lived about 3100 B.C., Yayāti (5th in descent from the Father of Mankind) would have reigned in circa 3000 B. C. Māndhātṛi who came twenty generations later would have lived about 2700 B. C. The period of Arjuna Kārtaveeryā and Parasurāma can be placed 300 years further down the stream of time. Sri Rāma flourished 65 generations after Manu and his date will therefore be not far from 2000 B. C. ($3150 - 65 \times 18$). King Sudās, mentioned in the Purānas (and wrongly identified with the Sudās Tritsu of the Rig Veda) ruled three generations after Sri Rāma, according to the Purānas.*

As regards the Manu mentioned in the Rig Veda, he cannot obviously be the Manu of the Great Flood, who is referred to in the Atharva Veda. (There is no mention of the Flood in the Rig). The Rig Vedic Manu might possibly be Manu Swāyambhuva, said to be born of Brahma and who had three daughters, around whom various colourful legends have been woven in later literature. Manu Swāyambhuva ruled on the bank of the Sarasvati (the "holiest" river in the Rig Veda). He was followed by five other Manus, the last being Chakshusha whose grandson was the notoriously oppressive King Vēna, the *bete noire* of the rishis by whom he was justly killed. His successor was the heroic Prithu, after whom the world is known as Prithvi (since he levelled the earth and made agriculture and cattle-farming to flourish).

We have seen that the date of Jamadagni and Parasurāma would fall in circa 2400 B.C. according to the calculations given above. As described by me elsewhere, this was a period when there was intense maritime activity along the Arabian Sea littoral, the Panis (or the Phoenecians) figuring largely in it. In this connection a rather startling theory has been put forward by Mr. Karandikar, who had done some research into the "history behind the Purānas". According to him the legends connected

* "The Vishnu Purana specifies the interval between Chandra Gupta and the great war to be 1100 years; and the occurrence of the latter little more than fourteen centuries B.C. (as shown in my observations elsewhere) remarkably concurs with inferences of like date from different premises" (Wilson-Translation of Vishnu Purana preface P. CIX).

with Parasurāma really conceal a great conflict between the Haihaya kings and an enterprising community of Brāhmins named Brigus. In Mr. Karandikar's view, these Brigus had settled extensively on the West coast of India, simultaneously establishing trading colonies abroad, particularly on the Persian Gulf and the Mediterranean*. Having amassed a great fortune in commerce, the Brigus became over-powerful and an object of deep suspicion and jealousy on the part of the Haihaya king, Arjuna Kārtaveeryā. The latter, with the help of the Atris, built a navy, of perhaps ten ships of 100 oars each, i. e. carrying 1000 oars in all; (hence the legend of the king having a thousand arms, according to Mr. Karandikar.) The monarch tried to stifle the commercial supremacy of the Brigus and to dispossess them of their large wealth on the plea that they were un-patriotic and greedy. In the contest the king was worsted and killed and Parasurāma, as the leader of the Brigus, wrought havoc on the Kshatriya clans all along the West Coast. This Brahmin warrior then carried his arms southwards into Kerala where he seems to have settled many Brigu families. Among the seaports organised by him on the West coast was Surparaka† (later called Soparika and known as Hopher or Ophir in the Near East). As a result of the resurgent Brigu influence and expansionism, it would appear that maritime trade shifted heavily from the Indus mouth and Gujerat areas to South India, according to Mr. Karandikar.

* I had mentioned elsewhere the theory that the Phrygians or Brigians of Anatolia and Thessaly were really an Indian tribe named Brigu.

† This was in addition to Brigu-Kaccha (Broach), the capital of the Western Brigus.

NOTE III TO INTRODUCTION

WAS THE INDUS-VALLEY CIVILISATION DESTROYED BY THE RUTHLESS ARYAN INVADER?

It is a common-place of archaeology that the task of the excavator is rendered simpler and more fruitful if the ancient sites under treatment had been subject to a sudden cataclysm like a flood or an earthquake. Even more popular with these spade-men are man-made disasters which can be put at the door of a ruthless invader, since this would leave most of the precious remains comparatively intact.

Mention has been made by me of the theory in favour with the British archaeologists that the so-called Indus Valley civilisation came to an abrupt and violent end (circa 1500 B. C.) as a result of a brutal attack by enemies, who were probably the Indo-Aryans, who had entered the Punjab about this time, according to the Western calendar. Horrendous evidence was unearthed of an alleged wholesale massacre of the hapless inhabitants of Mohenjo-daro, including numerous women and children. In the words of the eminent American archaeologist George F. Dales (of Philadelphia) "The excavators of Mohenjo-daro were content - at least at first - to put the blame for the "massacres" on several dis-associated causes and incidents. The "massacres" idea immediately ignited and has been used as a torch up to the present day by some historians, linguists, and archaeologists as visible, awful proof of the invasion of the sub-continent by the Aryans".*

Since the Indo-Aryans were worshippers of Indra (a bellicose god who delighted "in destroying the iron forts of his devotees' enemies even as age rends apart a garment"), "Indra stood accused" to use the expression of Sir Mortimer Wheeler, "of instigating the Indus-Valley massacres." Wheeler's views have

*Vide Journal of Oriental Research (Madras). Vol XXXI - Pp 32-39.

been accepted by others, (with occasional dissents) and even Basham chimes in with the following observation: "The Indus cities fell to barbarians who triumphed not only through greater military prowess, but also because they were equipped with better weapons, and had learnt to make full use of the swift and terror-striking beast of the steppes (i. e., the horse)." (Basham; 'The Splendour that was India' P 27).

But the chronology of the Indus-Valley culture is today notoriously in dispute, with a plus or minus of hundreds of years. There is no sure evidence of the correlation of the putative Aryan intrusion into lower Punjab with the abandonment of the Indus-Valley sites by its local inhabitants. As Sir J. Marshall pointed out long ago there is an interval of 2 or 3 hundred years between the end of Mohenjo-daro and the assumed Aryan intrusion of 1500 B. C. into the Punjab. (Marshall himself was inclined to blame the 'massacres' on the marauding tribesmen of Baluchistan). Further, the uprooted culture itself was not confined to the Indus Valley but extended to the borders of Delhi in the east and down into Gujerat in the south. If we are to accept the Westerners' views (particularly that of Sir Leonard Woolley whom I have quoted elsewhere) then the Indo-Aryans did not stop at Harappa or Mohenjo-daro but made a clean destructive sweep of the whole area of this culture extending from Kalibangan in Rajaputana to Lothal on the Cambayan Gulf. Even the intrepid Aryan horsemen, (inflamed no doubt by the fierce promptings of soma-drunk Indra!) could not have, I suggest, in the course of a few years or even decades, over-run half a million square miles of prosperous territory and overwhelmed a highly civilised and probably well-defended community.

But are there incontestable evidences of a massacre and of such a physical destruction? I would like to cite here the views of G. F. Dales: "What is the material evidence to substantiate the supposed invasion and massacre? Where are the burned fortresses, the arrowheads, weapons, pieces of armor, the smashed chariots and bodies of the invaders and defenders? Despite the extensive excavations at the largest Harappan sites, there is not a single bit of evidence that can be brought forth as

unconditional proof of an armed conquest and destruction on the supposed scale of the Aryan invasion".

As regards the probative value of the skeletal remains at Mohenjo-daro, in nine years of excavation (1922-31) only 37 skeletons were exhumed and not a single body was found within the 'great citadel', where presumably the height of the holocaust occurred. In the words of Dales "It would be foolish to assert that the scattered skeletal remains represent an orderly state of affairs.* But since there is no conclusive proof that they all even belong to the same period of time, they cannot justifiably be used as proof of a single tragedy."

"The most celebrated group of skeletons, the photograph of which is usually published to provide visible proof of the 'massacre,' was found in the area of Room 74, House V (HR area). The interpretation of this grisly discovery was not even agreed upon by the excavators themselves. Mr. Hargreaves, who did the actual excavating, states that because four of the fourteen skeletons were found above the ruins of the southern wall of the room, the entire group belonged to a date subsequent to the decay of the building and thus to a period posterior to the abandonment of the latest stage of the city. Marshall, the over-all director of the excavations, says, on the other hand, "this does not seem to be proven." He points out that the building belongs to the 'Intermediate-period' of the city and that this area was covered over and re-built in the Late-period; (the assumed 'Late-period' remains were not preserved at this part of the city; it is probable they had eroded away). Marshall suggests that the skeletons could belong to the interval between the Intermediate and Late-periods, "though the possibility of their being posterior to the Late-period may be admitted." He also disagrees with Hargreaves over the circumstances that produced this gruesome spectacle. Hargreaves stated, with questionable perspicacity, that the fourteen bodies 'appear to indicate some tragedy.' Furthermore, he observed that the twisted, intermingled positions of the bodies are those 'likely to be assumed in the agony of death than those of a

*Dr. R. K. Mookerji thinks that most of the skeletal remains represent formal complete burials (Hindu Civilisation I P. 23)

number of corpses thrown into a room'. Marshall read the evidence differently. He believed that the bodies were intentionally interred 'within a few hours of death' or else they would have been prey for animals and birds, 'There is no reason whatever for doubting that these burials date from the declining years of Mohenjo-daro's prosperity', stated Marshall, but he didn't suggest they represent any final massacre of the population",

Dales similarly discredits the story of the "slaughtered Harappans lying unburied in their streets". To quote, "This melodramatic description was prompted, in part, by the reported find of six skeletons in a lane between two houses in the VS area of Mohenjo-daro. And yet, the excavator stated in his report that 'from their position they appear to be posterior to the adjacent remains.' They were covered with loose earth, free from bricks and other debris that would indicate any violent destruction. There is no suggestion in the report that they were lying on the actual street surface. Marshall suggests again that they were probably burials of the Late-period, that just accidentally penetrated down between the building walls bordering the lane, the lane itself having been long before covered over. Had the skeletons really been found directly on the street surface, there would still be no case for a final "massacre", because the lane belongs to the Intermediate-period of the city."

The learned American dismisses the finds at the Deadman's Lane "as a well publicised but mythical slaughter." In the same vein, he concludes that another celebrated group of nine victims found in a single block was "not a massacre, *per se*, because many of the skeletons were incomplete and the collection represented only a few fragments of cranium and odd bits of bone"

Finally concerning the so-called "Well Room Tragedy" where a few bone collections were found in a position which could possibly indicate an indiscriminate slaughter, Dales makes this interesting observation — "The circumstances surrounding this tragedy are unknown and it would be presumptuous to cry 'massacre' on this bit of evidence alone".

The concluding remarks of this American scholar deserve citation. "Thus stands the evidence, in the case against Indra and the Aryans, or to be less specific, against the idea of a final massacre by whomever you prefer. The contemporaneity of the skeletal remains is anything but certain. Whereas a couple of them definitely seem to represent a slaughter *in situ*, the bulk of the bones were found in contexts, suggesting burials of the sloppiest and most irreverent nature. There is no destruction level covering the latest period of the city, no sign of extensive burning, no bodies of warriors, clad in armour, and surrounded by the weapons of war. The citadel, the only fortified part of the city, yielded no evidence of a final defence.

"The evidence, that is being gathered by present investigators, from various branches of the natural and physical sciences, is tending to support, in part, the theory expressed years ago by Mackay. Regarding the decay of Mohenjo-daro and the Harappan civilization, he suspected the cause to be "the vagaries of the Indus, rather than pressure by invaders, of whose existence we have, in fact, little positive evidence."

The details of the story of the decline and fall of the Indus Civilization are, as yet, far from clear, but a pattern of contributing factors is taking shape. This pattern does not include invasion and massacre as basic factors.

It is clear that the havoc caused by a cataclysm of nature, has been unjustly foisted on the Indo-Aryans. The final receding of the Rajaputana Sea and a rise in the coastline of southern Sind apparently occurred during the close of the 3rd millennium B.C. The desert invaded, what were hitherto, fertile regions: rainfall decreased and the protective screen of forest lands disappeared. The Indus gradually lost its "flooding" capacity, though not its vagarious shifts. Cultivation had fallen phenomenally, while commerce, via the sea-cum-river routes, probably stagnated. The Harappans were thereupon compelled to abandon their rich homesteads and sophisticated townships, and move elsewhere, probably southward into Gujerat. In the words of Dales, "the enemy of the Harappans was Nature, aided and abetted by the

Harappans themselves, who accelerated the spoliation of the landscape through improper irrigation practices, and by denuding the water-sheds through overgrazing, and deforestation. They would have eventually put themselves out of business through such malpractices—just as the Sumerians did in southern Mesopotamia—but the process was speeded up by a sardonic twist of the earth's surface. Thus ended one of the three earliest civilizations of antiquity—Indra and the 'barbarian hordes' are exonerated.'*

* Dr. P. V. Kane in his recent (1965) Presidential Address to the Indian Historical Congress, had pointed out that while Mohenjodaro must have contained a population of over 1 lakh, the fact that only a few dozen skeletons had been found in the abandoned city, showed clearly that there could have been no general massacre of the local population by invading hordes, as suggested by Western writers.

NOTE IV TO INTRODUCTION

THE DATE OF THE TOLKAPPIYAM

The most ancient Tamil work, now extant, is the Tolkāppiyam, a treatise on grammar, based patently on Sanskrit models and using the 'sūtra' style of composition, like Pāṇini.* Its genesis is usually attributed to the 4th century B.C., though, of late, attempts have been made to push the date a little back. For instance, Dr. Rajamanikkam, writing in the *Annals of Oriental Research*, (Vol. XIX, Part II) sponsors the suggestion that the great Tamil writer, Tolkāppiyāṇār, might be the contemporary of Pāṇini "or might even have lived before him", though this would imply a date of 8th century B.C. or so. The Tolkāppiyam is full of material, showing a strong parallelism with corresponding passages in Sanskrit grammatical and other works : the number of Sanskrit words used in the Tamil work, is also large, although as is the case with ancient Tamil works generally, a laboured attempt at finding an equivalent 'southern word', is often in evidence.†

From the point of view of assessing the age of the acculturation of South India, the Tolkāppiyam is of particular significance. That a Tamil grammatical work should have been composed by an obviously North Indian author in the 4th or 5th century B.C., is clear indication that the Aryans must have come down south several centuries earlier, learnt the language of the Southerners, composed prose and poetical works in that tongue, and finally given Tamil its body and substance, as also its refinement and its

* 35 items are mentioned by Charaka, and 32 by Kautilya, as the prime requisites of a literary composition. Of these items, technically known as 'tantra-yuktis', the Tolkappiam enumerates 32 (in its Porul-athikaram), 22 of which coincide with those of Kautilya.

† The same trend is now in evidence in translating English words and names into Tamil.

accidence, in the manner implied it in the famous Agastya legends and traditions—(unfortunately the Tamil work, ‘Agattyam’ attributed to the Sage himself, has been lost).^{*} On these premises, it will not, perhaps, be too venture-some to fix the oldest date of the Aryan colonisation of south India, *in strength*, at some period not far removed from the date of the great Bhārata War. (1400 B. C. ?)

Some sūtras of Tolkāppiyam are of special significance in this context. For instance, sūtras 142 & 143 read as follows :

Sūtra 142 (Porul Athikāram) :

“Mēlōr Moovarkum Punarntha Karanam

Keezōr-k Kākiya Kaala-munde ”

Translation : “There was, once upon a time, when the karanam as enjoined on the three highest (castes), began to be applied to the, lowest (caste) also”.

Sūtra 143 (Porul Athikarām) :

“Poyyum Vāzhvum Yātha pinnar

Aiyan Yāttanar Karana menpa ”

Translation : “They say that karanam was introduced by Aryans, after lovers began to prove false, and the ladies were considered unworthy.”

‘Karanam’, in the above sūtras, refers to the rite of ‘Agnikaranam’ or the Daiva or Brāhma forms of marriage before the sacred fire, prescribed by Manu and other Smṛiti-kāras, as the best form of nuptials. ‘Aiyan’ is the tadbhava of ‘Aryan’ and refers to the Brahmin, who is supposed to have spearheaded the Aryan penetration of South India; The expression, ‘once upon a time’, used by Tolkāppiyānār, strongly suggests that by his time the, practice of

^{*} Tolkappiyānār (whose Sanskrit name was Trinabindu) was a follower of Agastya. A sculpture of Trinabindu, with this name written in Nagari script, has been found in Java, in an Agastya shrine of the 8th century A. D.

the Aryan systems of marriage was quite old and well established. The sūtras also suggest that the bulk of the native population (largely considered as belonging to the 4th caste) was originally addicted to different marital practices (as e.g. the Gāndharva form of marriage) which, although not quite foreign to the Aryan community, was considered in this period (circa 1000 B.C. ?), to be unsuitable to society.*

* Podiyil Hill, in Tinnevely Dt. of South India, has long-established associations with Saint Agastya. There are literary references to this hill, indicating its importance from very ancient times. For instance, the poet Mamulanar, speaks of the war-chariots of the Mauryan Kings (4th century B.C.) advancing on Podiyil, supported by elephantry. Poet Parananar (Param Korranar) refers to the cutting down of part of the hill, to make a passage for Mauryan war-chariots. This tradition, perhaps, implies that Agastya lived at Podiyil several centuries before the christian era and that the Emperors of Pataliputra found it worth while to make pilgrimages to the hill in South India, out of reverence for the Sage's memory.

NOTE V TO INTRODUCTION

HINDU SAMSKARAS AND BASIC SPIRITUAL THOUGHT

Says Dr. P. V. Kane, (History of Dharmasāstra, Vol. II, P. 52) "The main outlines of the (Hindu) Samskāras show a remarkable continuity for several thousand years from the times of the Rig Veda to modern times". It will be useful if these Samskāras are briefly outlined here, to demonstrate the religious and cultural affinity, extending over sixty or seventy centuries, which has been the unique blessing of the Hindu nation. The Grihya Sūtras, going back to perhaps 8th century B.C., (Āsvalāyana Grihya Sūtra being probably the oldest, Baudhāyana, Āpastamba etc., closely following) describe these Samskāras in detail, indicating unmistakably that the Samskāras had been handed down from pristine times to the Aryan peoples by the rishis, who had 'seen' the appropriate verses* when "they burst forth into glorious song", at the promptings of their beatific experiences.

While it is true that the Vedic or Srauta rituals proper (like the Aswamēdha, the Rājasūya, the Agnichayana etc., have fallen into comparative neglect, partly owing to changing times and because of the disappearance of powerful Hindu potentates), the same cannot be said of the Grihya (or household) rituals,** which are still, by and large, observed by all Hindus (and some non-Hindus also!) who have not completely lost their religious impulses and cut away from their spiritual moorings. The following is a brief summary of the Vaidik Grihya rituals in common

* "Like the Srauta rituals, they are based on the fundamental principles of Vedic religion. They are addressed to the Vedic gods and they know of no images or temples" (L. D. Barnett - Antiquities of India, P. 163).

** The list given below is of the more important Grihya ceremonies common in Hindu India. Here I may give a quotation from Barnett, (*ibid* P. 180), who is not over-generous in his appreciation of the Hindus: "The modes in which the Vedas are recited (today) or sung, seem to have undergone but little change during the last 3000 years and the musical tradition that has been preserved and still observed in practice by orthodox vaidikas, is doubtless almost identical with that which existed in the age of the Brahmanas".

importance among all Hindu communities today in India and abroad—

- (1) The Pumsāvana - a rite to obtain male offsprings (on whom the Aryans set much store, as they would be the means of rescuing the parents from Naraka.)
- (2) The Garbhāśana—performed to conserve the ‘śiṣu’ or the un-born babe. This was, usually, performed in the fourth month of the pregnancy (along with item (1) in some communities).
- (3) The Sēmāntōnnayana, or the hair-parting rite addressed to the enciente wife and often combined with item (2).
- (4) The Sōshyanta hōma : Performed at the time of the birth of the child. It is also called Āyushya ritual.
- (5) The Jāta-karma : a rite performed over the new born babe: the Āyush-hōma is performed by the parent on this occasion along with the mēdha-janana (a rite to inspire intelligence in the new born),
- (6) The Nāma-karana : or the ceremony of the naming of the child, a sacred (or secret) name being accorded to it on this occasion (Sarman, Varman, or Gupta being added to the name even as the child belongs to the 1st, 2nd or the 3rd caste respectively).
- (7) Annaprāsana : a rite commencing the feeding of solid food to the child, usually about the sixth month.
- (8) The Karnavēdha, or the Godhāna ceremony, constituted the piercing of the ear, done at the end of the first year. (I have indicated, elsewhere, this rite as being performed in various Aryan-accultured countries in the distant Pacific and in the New World).
- (9) The Chōdākarana (or the hair cutting) ceremony performed in the 2nd or 3rd year of the child; usually after his

hair had grown somewhat and developed a 'divine matting'. This tonsure ceremony is an important one in the repertory of the Grihya rituals ; it is usually concomitant to a vow, taken by the parents, to gift the cut hair to a particular deity.

- (10) The most important event in the life of the adolescent youth (in the 1st three castes) is the 'Upanayanam' rite, investing him with the sacred thread and initiating him into the religious functions of his society. It symbolises a spiritual (or second) birth and should normally be done in the 8th, 11th & 12th year for the three castes.
- (11) The Samāvarta rites (marking the completion of studies) then followed, usually about the 18th year in the case of the Brahmins. The young novice became a snātaka or a 'completed' student on this occasion. (Modern Hindu society has practically forgotten this rite).
- (12) The last important Grihya rite is the Vivāha or Pānigrahana (wedding) ceremony. This ritual is, even now, performed almost in the same way it was done 5000 years ago, so far as the rituals and the accompanying mantras are concerned. (It must be sadly confessed, however, that an air of nonchalant make-believe and unseemly abbreviation often pervades, now-a-days, this sacred rite, which is not, however, without its social eclat and extravaganza.) Modern gadgets (e.g. a high-powered open automobile) and sophisticated paraphernalia, also contribute to rob this crowning Grihya rite of its essentially spiritual background and prayerful significance.

The above remarks will apply in some measure to other Grihya ceremonies, associated with funerals, (the death and śāddha rites) the details of which are too well known to require detailed description. Here too, the impact of modern conditions of life and some deterioration in spiritual convictions are, unfortunately, in evidence. But the remarkable fact remains that, despite the in-roads of materialism and of the scepticism born of modern 'enlightenment', the rituals are gone through by the

vast majority of the Hindus, often with the faith and the dedication which are the very essence of these long-established practices.

Asia has been the home of all the major religions of the world. As Tomlin observes* "The fact remains that all the great world faiths have come from the East. Even when, as so often in America, a new cult is founded, the elements, and usually the vocabulary, of the faith are inevitably Oriental, for the Western man feels, not without good reason, that the secrets of life, the arcana, are better known, if not always better practised, by the humblest Oriental than by the most learned Western divines". And Tomlin adds elsewhere,** "Perhaps the teaching, most accessible and attractive to Western minds, is that contained in the Bhagavad-Gita with its emphasis on Bhakti or devotion to a personal God. For it is in the revelation of Sri Krishna to Arjuna that we find the noblest message ever to have issued from the Oriental world: the sermons to face the future and its perils, with humility, with awe and even a touch of anguish, but without fear".

The Bhagawān spoke to Arjuna over 3000 years ago (according to my calculations), but his soul-stirring words are still very much with the present day descendants of those Indo-Aryans, whose colourful saga, I have endeavoured to portray in these pages. With us, the ancient past is not dead: it animates the very breath of our spiritual and cultural life. Even those who are totally ignorant of our history and would decry archaeologists as "old-bone merchants," are still full of unconscious religious and cultural urges, welling up from the songs and litanies of our Vedic rishis. Today, even the illiterate often mouth the names of the heroes of the Purāṇas and the Kāvya: even the wholly untutored, frequently cite maxims and sayings, which first found expression in the oldest sacred texts of the East.

The Aryan religion must have existed before the Rig Veda: but the latter gave it tone and expression. Similarly, some

* "Great Philosophers of the East," P. 299.

** Ibid P. 313.

philosophy must have been preached before the Upanishads : the latter gave the embryo, vigorous life and a transcendental birth.

Our ancients sublimated the baser instincts of humanity within a mellowed and chastened spirituality. Meat-eating gave way to a dislike of all animal food ; spirituous liquor was abhorred ; even the lure of the mild Sōma was eventually abandoned in favour of total abstinence. The Rig Vedic bellicosity yielded ground to ahimsā and pacifism, which became the hall-marks of refined Hinduism. Truth was elevated to the pedestal of religion, and Rta (the stern moral order) became the norm of a good life. Wealth was decried ; at best, it was considered only a social trust to be given away in charity ; the guest shone almost like a welcome God.* Even mere existence became, in due time, an affliction, and paradise (swarga) a mere mirage, luring the unwary. The ideal of life was to achieve yogic Nirvāna, to cut asunder, for ever, the bonds of recurring birth and decease. In this process, there grew a dislike of worldly pelf and power and a love of austerity and self abnegation, the equal of which was seen in no other country. If our ancient philosophers had, occasionally, shown a cold spirit and banked their spiritual fires with too much fuel, this was not due to any pessimism or lack of faith in life. Quite often, the discourses of our ancient teachers breathe a warm belief in human aspirations and a kindly understanding of human frailties and limitations.

* Which other religion can show such a dedicated spirit of charity ? The following verse appears at Shradda Mantras :

दातारो नोभिवर्धन्तां वेदाः सन्ततिरेव नः ।
 श्रद्धाचनो माव्यपगात् बहुदेयं च नोस्तु ॥
 अन्नञ्जनो बहुभवेत् अतिथीश्च लभेमहि ।
 याचितारश्च नस्सन्तु मा च याचिष्य कञ्चन ॥

Translation :

Let benefactors increase ; let Veda's and progeny flourish !
 Let faith never desert us ; bless us with wealth to be given away !
 Let food be plentiful ; let guests flock to us !
 Let all mendicants come to us ; let us never beg of others !

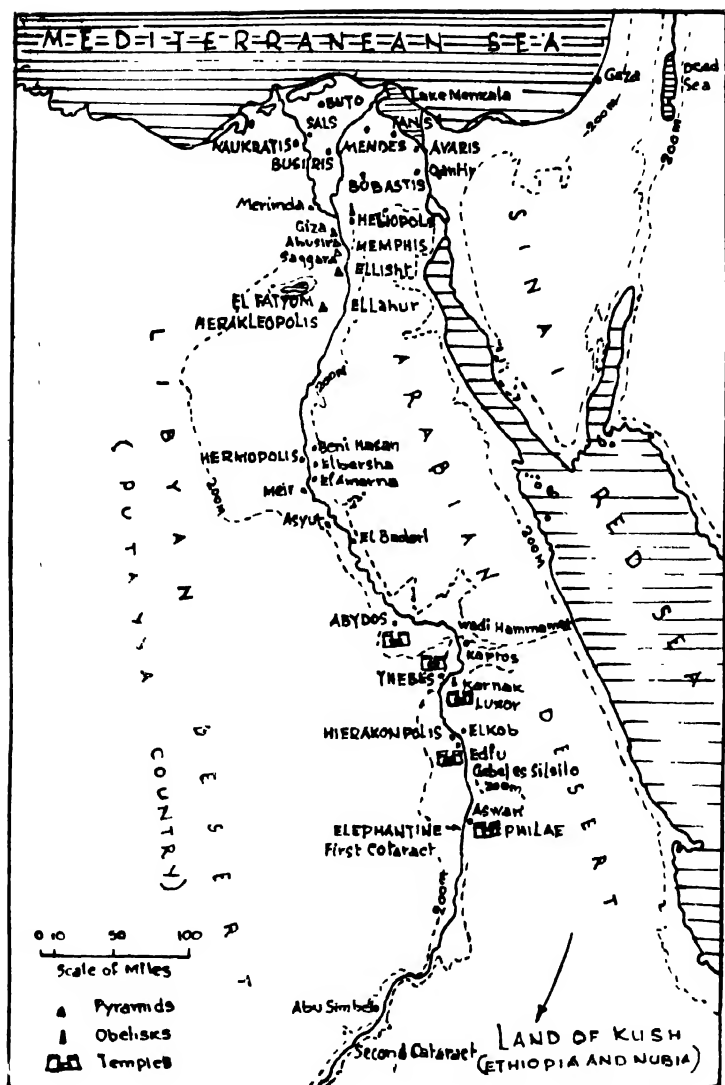
As is often alleged, Indian culture was not always more concerned with the other world than with the well-being of this one. India produced the earliest republics and democracies in the world. It also evolved, in the dim beginnings of time, the fundamentals of positivist thought, along with less desirable cults of materialism and disbelief in God.

Indian thought, through the ages, has also been inspired by social and national ideals. As Dr. R. K. Mookerji observes,* "In fact, a student of Indian culture, investigating its principles, contents, and characteristics, will find that a good deal of what now passes for socialism or communism is held in solution in some of the traditions and institutions, in which the culture expresses itself." Even in the Rig Veda, the germ of a welfare state is dimly visible. Deities are worshipped as symbols of social welfare as Satya (Truth), Rta (moral order), etc., and service to man is expressed as a mode of worshipping god, pictured as Nara-Nārāyana, (God-in-man). Sūnrita or liberality, is deified in various Dānastutis. (e.g. Rig Veda, VIII, 117). Human hunger for food is equated to the Great Hunger, which is born with life and with the eternal craving of the Soul to attain self-realisation. God often takes the shape of this Cosmic Hunger and is styled Samjñāna or Samajñāna, corresponding to the collective social conscience, a sort of community-soul. In Rig Veda, VIII, 79, God becomes the supreme saviour "clothing the naked, curing the sick, helping the blind to see and the cripple to walk." Says Dr. Mookerji, "This Vedic ideal of worshipping God by serving Man, was later embodied in a regular religious system, which presents Hinduism as consisting of stages in the progressive expansion of the individual into the Universal, as the ultimate meaning of religion. This socialist and positivist outlook has moulded Hindu religious history through the ages." Dāna and Dharma grew to be axioms of life; the doer of good deeds became, ultimately, the elect of the God.

This spirit of humanism reached its apogee in Mahāyāna Buddhism, with its emphasis on the worship of Bōdhisattvas, the

supreme benefactors of humanity. By definition, a Bōdhisattva is one, who prefers the salvation of the community, to his own personal salvation. "He refuses the bliss of Nirvāna, till he is able to alleviate the sufferings of others." The Mahāyāna is, *par excellence*, the doctrine of Universal Love ; it would mitigate the pitiless action of the Law of Karma by the beneficent force of Karunā. Self-emancipation has no meaning in the 'Great Vehicle' creed, unless it implies also the uplift of the society and compassionate and dis-interested service to it. Even the Jīvan-Mukta is given a second place to the Bōdhisattva, the one with a Mahā-Karuna-chitta. The latter's prayer, as summarised by Vasubhandhu, reads as follows :

"Would that all the merits, which I have accumulated in the past and in the present, be distributed among all sentient beings and make them aspire after supreme knowledge ! Would that I accompany, all the time, such sentient beings and protect and purify them."



TO FACE PAGE NO. 61.

ANCIENT EGYPT (Misraya in Avestan).

CHAPTER II

THE INDO-ARYANS IN AFRICA

I have styled the subject matter of this chapter as "The Indo-Aryans in Africa". The pages of history are full of the achievements of a number of nations, ancient and modern, who have distinguished themselves as great maritime adventurers and colonisers. We have only to recall the names of Carthage, Greece and Rome in ancient epochs, and of Portugal, Spain, Holland, England and France in more recent times, to project pictures in our minds, of great conquering and colonising powers. However, I suggest, that none of these nations will approach, in the scope and splendour of their colonial achievements, that particular people, which I have in mind, namely the great Indo-Aryan nation. In the following chapters, I shall indicate how far I am justified in giving such rank and precedence to our ancient progenitors*.

It has been a favourite obsession, with some historians, to depict the Indo-Aryans as a loose confederation, of rather primitive wandering tribes, who originally inhabited the regions round about the Caucasian mountains. According to this theory, these nomads were compelled, under stress of economic and other pressures, to spread out, both East and West, down to the Punjab and the Indo-Gangetic plains in India, and upto the Iberian peninsula in the other direction. This theory has received considerable challenge, in recent years and eminent archaeologists and historians, both within and without our country, are inclined to think, that the original habitat of the Aryan people must have been, not the Georgian steppes, but lands considerably to the east;

* Some European writers have not missed the intrepid colonising abilities of the Aryan peoples; in fact, the Puranic legend of Vishnu, (as Vamana) taking three steps to encompass the earth, has been interpreted as symbolical of the march of the Aryan community across Europe and Western Asia, in pre-historic times.

and that, in fact, the seed ground of the Aryans lay, mainly about the region of the Hindukush and Sulaiman mountain ranges and the great Indus River basin. As a concomitant to this revised theory, the claim of the Hindus to be the most civilised people of antiquity, prior in date, perhaps, than even the races of ancient Egypt, and the Sumerians of Chaldea, has been put forward. According to Western critics, such a claim, apparently based on mere tradition, probably kept alive by national vanity and not founded on any tangible proofs, should be dismissed as unworthy of serious consideration. The Indo-Aryans have been put down, by them, as a branch of the great "Indo-Germanic" family, which immigrated into India from Central Asia, (if not from the circumpolar regions near Lithuania and Scandinavia), and developed an independent civilisation of their own in the land of the Five Waters, long after ancient Babylonia, Assyria or Egypt had flourished and had probably commenced to decline. It is however, my thesis that the above view is quite refutable in the light of some new evidence, and the un-biassed interpretation of old ones. Without going into deep detail, (for which occasion will be found elsewhere in these writings), I venture to postulate the table of chronology which, will be found appended to this chapter. [The data, contained in this table, derive some support from such eminent Indologists, as Dr. P. V. Kane.] According to this chronology, the Vedas were composed between 5000 and 3000 B.C., the Brāhmanas and the Āranyakas between 3000 and 2500 B.C., the major Upanishads between 2000 and 1500 B. C., and the Dharma and Nithi Sāstras, and the Grihyasūtras between 1000 B. C. and 500 B. C. Granting the correctness of this chronology, the Aryans can claim precedence, in point of time, over both Egypt and Sumeria, as the architects of Asian and European civilisation.

I have claimed that the Aryans constituted the greatest colonising, conquering and civilising force in the world, in ancient times, and that their record has not been equalled since. To substantiate this claim, I shall indicate the broad venues of the great migrations and pioneering expeditions undertaken by our ancient forefathers. These venues cover in the West, firstly Egypt and the Hellenic World; secondly, Iran, the Mesopotamian River valley and Asia Minor and thirdly those areas of modern

Europe which, unmistakably, bear the impress of Aryan language, culture and civilization. As regards Aryan activities to the east of Āryāvarta, these will be discussed separately, in subsequent chapters.

Let us take Egypt first. The land was known to its early inhabitants, as seen from the hero-glyphs, as 'Kamit' (black soil) and its mighty river as 'Api' (waters). These names seemingly have a Sanskrit origin; "Ka" (or Ku) in Sanskrit means black, and 'mrit' is earth or soil; similarly "āpah" means, in Sanskrit, "waters". The land was subsequently called by its present name of Egypt, by the Phoenicians and the Greeks. Here again Sanskrit traces are clear. Gupta in Sanskrit implies 'pure' and "agupta" is the reverse of it. Today Egypt is known as El Misr (or mixed) all over the Near East. Even to the ancients, the country was known as 'Misra' or a land of mixed peoples, because of the two different racial groups comprising its population. The dark Nubian with crinkly hair, and the fairer Asian strain with aquiline nose and straight falling hair, constitute the main elements of this racial mixture.* The river, with its vivid azure colour was appropriately called 'Nila' or Nile, a name evidently of Sanskrit parentage.

One might well ask how these Sanskrit names found their way into North Africa. There is, in my opinion, a considerable body of evidence to establish a close inter-connection between ancient Āryāvarta and Kamit. The theory, which strongly suggests itself is, that a large body of enterprising men from our country marched westward, by land and by sea, and established, if not large colonies as such, big entre-pôts of trade, centres of religion and learning and small townships for the use of the immigrants. This theory is not so fantastic as it might seem, at the first blush. A well-known Theosophist, once attested, with the sublime confidence, which is characteristic of his faith, that several thousand years ago, a large party of Dakshinis, with an

* It is significant, that Darius, the Great, called Abyssinia and Sudan "Kushayya" i. e., "dark-peopled".— In old Persian and in Hebrew, Kush, or Kish, meant dark. (Skt : Krishna). Darius called Libya, "Putayya country". (Skt. Puta = hollow); Egypt was, of course, 'Misrayya'.

Aryan Prince at their head, sailed, under the orders of Manu, from our sub-continent and landed at the court of one of the first-Dynasty Kings (Circa 3000 B. C.), who had no son and whose daughter the Aryan Prince promptly married. The immigrants did useful work in spreading, not only their religion and culture in their new home, but also the physical features of the Aryan race through extensive inter-marriage. These statements of his, the eminent writer, based on the best of all evidences, namely, his own personal knowledge, as he was apparently present in one of his previous incarnations at Thebes, at the time of Ramesses, the Great, and freely mingled with the descendants of those very Dakshinis who had come from Āryāvarta !

Naturally, I cannot expect the gentle reader, to admit the subjective testimony of Mr. Leadbeater, with the same unquestioning credence, as the brethren of his great philosophical persuasion, but there is, fortunately, other and stronger evidence, which I hope would elicit the belief of the unbiassed.

The predominant Egyptian racial type, both in ancient and in modern times, is foreign to the African continent. In the opinion of a great historian,* this leads to the assumption, that the ancient home of this type, should be sought in Asia. This opinion is shared in by Sir Wallis Budge (an eminent Egyptologist), whose views I cite below (from his book, "The Mummy").

"The *indigenous people* were a non-warlike race, and were content to act as hewers of wood and drawers of water to the invaders. At some time or other, probably during the Pre-dynastic Period, numbers of people from the East who possessed a civilization similar to that of the Sumerians — they may even have been Sumerians — found their way into Egypt. They brought, with them, superior processes in the arts and crafts, and their religion was of a higher character than that of the Egyptians, and their

* Will Durant - "The Story of Civilisation".

gods were represented in human forms. It was their influence that caused the Egyptians, of a later date, to give human bodies to their bird-gods, animal-gods, and reptile-gods. It seems, that these invaders first made their way into Upper Egypt and that having settled themselves there, they invaded other parts of the country, both in the south and in the north and that wherever they went, they imposed their sovereignty on the natives. It is probable, that the Followers, or Servants, of Horus,* whose exploits are related in the great text at Edfu, are none other than these foreigners. Their success was due, entirely, to the Mesenu, or workers in metal, who accompanied them and who were armed with great copper harpoons. With the Negro, the Egyptian is, in no way, connected."

The Egyptians themselves, always looked towards the East as their original home-land, even as the Hindus look to the North as the sacred domain of the Gods, if not as their ancestral home. According to another historian, the people who founded the Dynastic rule in Egypt, somewhere about 3000 B.C., came via the Red Sea, as they entered the realm neither from the North nor from the Upper Nile. They were highly artistic (vide the ancient sculptures, of exotic origin, at Coptos) and they introduced the hieroglyphic system of writing, near about 2500 B.C., into Egypt. They professedly hailed from the "Land of Punth", otherwise known as "the Land of the Gods", to the Pharaohs. I suggest that these intruders were, essentially, a branch of the vast Aryan race, which wandered into Egypt, via the Red Sea, from Āryāvarta. They intermingled with the local inhabitants, adopting their language, but imposed their own culture and religion on them, modified, in some measure, according to local circumstances.

Who were the Aryans, who thus intruded into ancient Kamit? They must have come through the Arabian-Sea waters and the Red Sea (which, in olden times, meant the Persian Gulf), carrying with them, not only the Sanskrit speech, but also the religion of

* Horus = Sorus = Surya(s).

India. It is very likely, that they embarked on their Egyptian adventure, from our western coastal lands, spreading from the mouth of the Sindhu down to Malabar.*

In this connection, it is of interest to discuss the whereabouts of the Land of Punt, or Pankth, mentioned by me earlier. Under this name, the ancient Egyptians pictured, in their sacred writings, a distant country, bordered by great seas, full of valleys and hills, rich in dark and valuable woods, incense and unguents, as well as rare animals like camels, cheetas and panthers, dog-headed apes and long-tailed monkeys, and winged creatures with bright plumage, flitting over huge forests filled, particularly, with scented trees and cocoa palms. In dim legend this land of Pankth was conceived as peopled by the Gods, whose very passage, along the Arabian Sea coast on their way to Egypt, had consecrated all the coastal tracts. The Egyptian dieties (of whom, more anon), are consequently styled 'Kings and Queens of Pankth', in the hieroglyphs. An Egyptian legend, cited by Plutarch, alleges that the body of God Osiris (Asurya), was brought by Goddess Isis (Ushas) from the East.

It has been fashionable, for some historians to identify the Land of Pankth with Somalia in East Africa, despite the fact that there are no peacocks, or long-tailed monkeys, incense-trees, collyrium, cocoa palms, boomerangs, gold or silver there, not to mention a highly civilised community, so favoured physically as to be taken for tribal Gods and Goddesses.

* Trade contacts between India and Egypt are both numerous and ancient. According to Wilkinson, the tombs of the Pharaohs have brought to light both indigo and tamarind wood, from India. Lassen says: "The Egyptians dyed cloth with indigo and wrapped their mummies in Indian muslin." Rev. T. Faulkes adds (Indian Antiquary Vol. VIII), "The fact is now scarcely to be doubted, that the rich Oriental merchandise of the days of King Hiram and King Solomon, had its starting place in the sea-ports of the Deccan, which also exported to Egypt, some of its esteemed spices." "In King Tutankhamun's tomb, have been found, exports from India like peacock, rice, ginger and cinnamon" (R.K. Mookerji, "Glimpses of Ancient India. P. 28).

The weight of evidence is strongly in favour of India as the Land of Pankth. I may mention that even the great historian, Toynbee, attributes an Eastern origin to Egyptian religion and culture, but then he would not go further east than Sumeria, on this account. Toynbee, perhaps, overlooks the fact that, in Egyptian mythology, the holy morning star, (Goddess Hor), was found to rise westward from the Land of Punt, from where the morning sun rose and which therefore must have been due east of Egypt.* There is incontestable evidence, that the Indian west-coast was, in later days, in active contact with the Persian Gulf, (then called the Red Sea) and the Mediterranean, which places were natural means of access to Egypt. It is well known that King Solomon (circa 900 B.C.), got his prized requirements, viz., ebony, silver, apes, peacocks, and sandalwood, from Malabar. There was active trade between the latter region and Babylon, about the time that Egypt was colonised by the Aryans, as I shall show below. There is, moreover, the interesting chronicle, recorded in stone, of Queen Haphseput** and Pharoah Sankar-rah, about the sending of a special expedition to the Land of Punt, the so-called 'Ophir' voyage. 'Ophir'*** was the name vaguely applied by Egyptians to lands to the south-east of their country, which were the sources of a rich import trade, as well as much cultural beneficence. Sir Leonard Woolley supports the view, that the culture of Egypt came from the Orient, or as the Egyptians said, from the Land of Horus (or Sūrya) which lay in the direction of the Rising Sun; but, here again, this illustrious savant would travel no further east than the Persian Gulf. In Woolley's words "The immigrants need not have been Sumerians; indeed it is certain,

* Egypt and the Indus valley are in the same latitude. To the Egyptians, the East was the Land of the Gods, and the West, the land of the dead. This was the reason why, all the tombs and necropolis (cities), were built on the west bank of the Nile. (P. 96 "The Valley of the Kings." O. Naubert.)

** Also spelt Hatshepsut, who adopted the prenomen of Maat Kara (Mahat Karah?).

*** Certain European writers (and Dr. A. C. Das also) equate Ophir with Suppararka (modern Sopher), an ancient sea port, in the west coast of India. Sopher was known as Hophir or Ophir, in the Near East, and is thus mentioned in the Bible.

they were not. It is more likely, they were middlemen, seafarers of the Persian Gulf area, who were in close touch with Sumer. There is reason to think, that there did exist such a people, from whom the Phoenecians claimed descent. Whosoever were the carriers, Egypt did get Mesopotamian imports in goods and ideas. The clearest of all the evidence, for this, are the cylinder seals which were found at Coptos and which are a hall-mark of Mesopotamia."

As I had mentioned, the 'Ophir' expedition was sent out by Pharaoh Sankar-rah, [but the King died about 1800 B. C, before the expedition came back. His good Queen Hatsheput, (a very active woman, who held open court and reviewed the discipline of the army in person), has indelibly recorded in stone, the results of the voyage, which took nearly $2\frac{1}{2}$ years to be completed. The Queen mentions that the flotilla, which consisted of several boats supplied mainly by the Phoenecians, reached the Land of the Gods in good shape and after a short stay there, at the court of the local Prince, spelt *Puru-hu* by the African scribe (i.e, *Purushu*, obviously an Indian name), came back with much useful cargo in the shape of gold and silver, leopard skins, apes and peacocks, hardwood, incense, boomerangs, eye-paint, dye-stuffs, etc. It is clear, from the nature of the cargo and the time taken on the voyage, that Pankth cannot be Somalia, to which the sturdy Phoenecians could have made the round voyage in a few months. The Land of Pankth was, doubtless, India and the particular region visited was the one sanctified in our ancient lore as 'Punyabhūmi', or the land favoured by the divinities. Where was this wonderland? It was none other than the country, known to the Rig Vedic rishis, as Pankth or Pakthya, an area roughly corresponding to the present North-West Frontier Province and parts of Afghanistan and trans-Indus Punjab.* The name still survives in "Paktoon", which covers the large tribal regions on either side of the Pakistan border in the north-west, which area is otherwise

* Dr. A. C. Das sees in 'Punt', the Pandya-Kingdom of Madura. Dr. R. K. Mookerji opines that the Ophir voyages touched South India from where "ivory, precious stones, gold, sandalwood and monkeys were carried to Egypt" (Glimpses of Ancient India, P. 28).

known as Paktoonistan, where the language spoken is Paktu or Pashtu. The characteristics and physical features of this sturdy tribal nation are too well-known to need much delineation. They seem to have maintained their racial type almost unaffected since Vedic times, along with their love of independence, thirst for adventure, a prone-ness to easy irascibility and a liking for foreign travel. The surmise is well-warranted that the bulk of the Aryan immigrants into Egypt came from this area, particularly from the communities collectively known as 'Pakthyas'. They seem to have travelled down the Sindhu to Kerala and to Tondaimandalam and after some sojourn there, (with some consequential cultural and ethnic modifications in their make-up,) migrated to Western lands in search of trade, colonisation, and adventure. Whether the name Pandya (perhaps derived from Sanskrit 'panya' or trade) has any connection with Pakthya is a matter of conjecture, but the historian, Dr. A. C. Das, stoutly maintains this derivation, on the ground, among others, that the Pandyas were a sea-faring and highly commercial people-(their flag showed, appropriately, the fish) who, in later history, spread their tentacles of trade far and wide (up to Rome* in the West and Cambodia in the East) and who were known for their keen commercial instincts and love of maritime adventure. The Phoenician records, from about 1000 B.C., show them as keeping an active contact with Malabar and the Coromandel, and it is a permissible conjecture that this commercial interest was but a continuation of their ethnic and religious affinities with South India in the remote past. It is of interest to mention that an Egyptian engraving of about 1500 B.C., shows a traveller from the Land of Pankth, making a votive offering, to Ammon, of a silver image of a diseased member of his body. The limb affected was his leg and the sculpture shows the limb to have been a leg of elephantine size! Filariasis was apparently an Indian complaint of great antiquity. It may be recalled that a

* Pliny complains that the Romans were overfond of Indian spices and other luxuries. "There was no year, in which India did not drain the Roman Empire of 50 million sesterces" (1 million is pounds sterling). Nero burnt, at one funeral, one year's import of cinnamon and cassia. On Scylla's funeral pyre, 210 loads of Indian spices were emptied.

great Chola King (1st Century B.C.) bore the unflattering cognomen of Kari-kālan.*

That the Land of the Gods was situated near the big southward bend of the Sindhu, is proved by another historical episode. Darius the Great, (who was intensely Aryan, but anti-Daivic) conquered Egypt about 525 B.C. Having probably learnt, during that process, about the "Ophir" expeditions of the earlier rulers of the country, he, on his own account, sent out a naval expedition from the Persian Gulf, to the Land of Pankth, under a Persian Admiral named Skylax. This flottilla journeyed up the Indus to Ataka (Attock) and Pushkalāvati (Charsadda**) and back, taking about 18 months, in the process. The result of the expedition was the conquest of Pakthya territories, as well as Souvira or Sind, by Darius, a few years later, thus establishing the richest of his conquests, judged by the annual tributes collected. I may mention at this stage, that according to the great grammarian Pānini, (circa 800 B.C.), there was an active trade in unguents and perfumes, between Pakthya and Egypt, through Brighukaccha (Broach). I suggest therefore, that the locale of 'Ophir', should be placed somewhere in India (probably the north-west of India) on the strength of all available evidence, and not in obscure and benighted Somaliland.***

We shall now turn to the wide similarities between Egyptian religion and the Vedic faith. Both were based on natural phenomena and their manifestations. The Egyptian Sun-god, Horus (Greek, Sirius) was none other than Sūrya, Osiris was equatable with Asura, which in early Rig Veda, was the epithet of Indra, the supreme deity of the Vedas. Osiris was later converted

* In Tamil this may mean "elephant leg"; sipada or elephantiasis is mentioned in the Atharva Veda.

** In the N. W. F. Province.

*** I have narrated, elsewhere, the story of King Solomon sending an expedition to 'Ophir', which according to this monarch, "was situated in India."—This seems to practically clinch the issue — Josephus, writing in the 1st century A.D., mentions, in his 'Antiquities of the Jews', that Solomon told his stewards and pilots "I command you to go to the land which was called Ophir of old but now termed the Golden Chersonese, which belongs to India, to fetch me gold."

into 'Asūrya' (i.e., Sun of the Night, as the Egyptians termed him), when he becomes a "sleeping sun" as mentioned in a Rig Vedic hymn (X, 86, 21). Isis, is none other than Ushas, (Gk. Eos), who in the Veda, is often described as the consort of the Sun, who follows her "as a bull a cow" (Rig Veda). The Egyptian god 'Ammon'. was the Dean of the Heavens; he was invisible but in unchallenged control of the lesser deities. He was also pictured as 'RA' in the hieroglyphs. He should be clearly equated with the Vedic Sakra, or Prajāpati, who was the king of the gods. An Egyptian town, Saqqara, was actually named after him, even as Heliopolis (Sūryapura) was named after God Horus or Sūrya. Ammon represents the Egyptian attempt to find a Supreme Being, self-existent and self-producing, the creator and the destroyer, having a dual role to play in the cosmic drama. Thus 'RA' accords well with the Aryan concept of Dyaust-pitar, the Ruler of Heaven. (Gk. Zeus Pater or Prajāpati*). It is clear that the divinity Ammon, figuring in Egyptian mythology is of Sanskrit origin, as is the case with the Egyptian god called 'Ptah', who often substituted for "RA". Egyptians conceived of Osiris (the darkened Sun) as in perpetual conflict with the evil spirit called "Seth" and his consort called "Nephty". 'Seth' is probably the Indian "Sathan" (Satan) or Destroyer, while Nephty is Naktā, the Spirit of the Night. Post-Vedic Siva is the Egyptian "Seb", his consort being, sometimes, called "Ima", a variant of Umā. The African god "Har" is Hara and his consort "Hathor" or Sathor (the Lady Ruler of Punkth, to the Egyptians) being none other than 'Sāvitri' or Lakshmi. Hathor was also called 'Seket' or Sakti. The 'good' god BES, who dispensed peace, gentle manners and good cheer to all nations with a lavish hand, can be equated with Indian Vishnu, who was given similar attributes by Vedic seers. (BES later on degenerated into Bacchus with the Greeks, even as Vishnu has been somewhat coarsened by his followers in India, addicted to the Krishna-Gōpikā legends). Other aspects

* In pictographs, the first syllable is sometimes omitted, it being supplied by the second one and by the context. RA is short for SAKRA, on this assumption.

** From Skt 'Sad' = evil, malignant, cruel.

of Egyptian mythology show a close parallelism with India. The lower world was peopled with demons and torturers and was surrounded by dark waters (watched over by cruel dogs), which could be crossed only in a boat, in company with a cow. The souls of the dead—(called “Ka”* or the Unknown, as in India) had to sojourn in the dark world before ascending to higher regions. The earth was conceived, sometimes as a cow, and sometimes as a huge sphere borne aloft by a serpent, as in our own Purāṇas. The Egyptian counter-part to our “Rta” (or justice, truth and order) was Maat (Sanskrit, Mahat)**. It was identified with Divine Justice and was often personified as a daughter of Horus or Sūrya. Instances of such similitude could be multiplied, but it would suffice to say that the resemblance between ancient Egypt and Vedic India was so strong and suggestive that Western critics could not but recognise it as strongly evidential of the fact, that the two cultures could not have flourished always apart from each other. Naturally, confirmed Egyptologists, like Flinders-Petrie and Breasted, have come to the easy conclusion that in this traffic of ideas and religion, India was the borrower, and that Egyptian mythology and rituals travelled the high seas to Āryāvarta, to be incorporated in our oldest sacerdotal literature which, as we have seen, was composed over 6000 years ago!***

The Egyptians, like our Aryan forefathers, performed the bull sacrifice and venerated the cow, but the post-Vedic practice of substituting the goat and the ram for the bull, was not adopted in

* Ka, in the Rig Veda, refers to the Unknowable God or Prajapati. In ancient Egypt, Ka, represented by a falcon, usually meant the soul or the spirit of a person.

** Skt. Mahat - lofty, noble, pure, eminent; Skt. RTA - Upright, honest, pure, sacred. In Indian theogony, Mahat or the “Great Principle,” was one of the creative principles of God. Mahat was also called Iswara, from its exercising universal supremacy over created things. (c/f. Vishnu Purana, Book I, Ch. II).

*** This view can only be compared with that of a well-known Bombay politician, who would see in King Dilipa an ancient Pharaoh, and in Sri Rama of Ayodhya, nothing but the fictional and poetic counter-part of Ramesses the Great, of Egypt!

Africa. As among the Hindus, the hog was looked upon as unclean, and if one accidentally touched it, he had to plunge into water, clothes and all ! With regard to phallic worship also, there is a significant resemblance, and the "linga" was occasionally found on the bank of the Nile. As I have mentioned, 'Osiris' and Isis could be identified with Siva and Sakti ; the bull (or rishabha) was sacred to Osiris, and the cow to Isis, and both were symbolically worshipped at the respective shrines. In fact, the similarity of these rituals was so striking that a historian records, that when our soldiers were sent to Egypt in the last century to fight against the French, they instantly recognised the many sacerdotal stone-symbols there, (especially the "rishabhas" and the serpents), as identical with those in India.* It is mentioned that they shouted to their officers that the ancient Egyptians were also Hindus and expressed indignation at the vandalism, practised by the Muslim natives, on these ancient "Hindu temples, dedicated to Siva and Sakti".** The symbols of Upper and Lower Egypt were the serpent and the falcon, corresponding to the Nāga and the Garuda motifs in our legends. As regards the lotus symbol, E.B. Havell observes thus :—"The so-called sacred lotus of Egypt (*nelumbium speciosum*) is not an Egyptian but an Indian flower. It may have been imported into Egypt from Persia, or more probably, from India".

It is significant that the first great King of united Egypt was named Menes or Manus, a name reminiscent of Manu Vaivaswata of India. The latter was the off-spring of the Sun, in the same way as some other Gods (like the Ribhus and the Maruts) were

* The Indian Army helped England to put the French out of Egypt in 1801/2. A Madras regiment of Sappers and Miners bore the "honours of the Sphinx" for their service as pioneers, in this campaign.

** Some Sanskritists are convinced about the close inter-relationship between Egyptian and Indian forms of worship. In their opinion, the use of the Chattra and the Chamara, as well as the tall incense burner in Egypt, is typical of Hindu practice. From the way in which God Horus (Surya) was carried in procession round the temples in Egypt, the rite could have been copied straight from our Agamas. The water used in bathing the images, was distributed as a sacred offering to the worshippers.

merely deified human beings. This Vedic concept got so exaggerated in Egypt that every Pharaoh thought himself of divine progeny, (like Alexander, the Great, and some Roman Emperors), and was worshipped as such by the people.

Let us now examine other points of resemblance unrelated to religion or mythology. Anthropometry is strongly in favour of the theory outlined by me. Heeren, an early Egyptologist, finds the skull measurements of ancient (mummified) Egyptians remarkably close to those of Indians and he strongly believed that the dominant Egyptian strata came from India. The learned archaeologist, Flinders-Petrie, also "inclines to the opinion that the Egyptians were of common racial origin with the Phoenicians and that they all came from the Land of Pankth, via, the Red Sea" (i.e. Persian Gulf). Modern Egyptologists conclude "that the Egyptians of ancient history are probably a fusion of the indigenous white-race of North-East Africa with an intruding people of Asiatic origin". It is clear that the intruders could not have come from Somalia where the population has always been heavily Negro in antiquity; and this confirms the view that the Land of Pankth, was in Asia, and never in East Africa.

Social and political customs also argue in favour of the preceding assumption. In Egypt, as in Āryāvarta, the king was a surrogate of the deity. He was the head, of both the Church and the State, the supreme judge and the law-giver. He commanded the army in war and he presided over the sacrifices to the gods, as the "yaja-māna," in the same way as the chakravartins at the Rājasūya and the Asvamēdha rites. The sceptre was held in heredity, but natural succession failing, the heirship was determined by kinship, as in India. "The king was always either from the military or the priestly class" says Herodotus. In Vedic India, we have instances of kings who were rāja-rishis, and Brāhmanas who were great army leaders and even kings, thus making the roles of prince and purōhita occasionally interchangeable. In Egypt also, the army or the priesthood were the two professions open to all men of rank. The administration of the law was also in the hand of the priests (as in India), while the prime posts in the army and at court, were held by the royal clan. A great writer says, "The Egyptians are said to have been divided

into castes, as in India, but in practice, these were classes, rather than castes, in the sense, that the son did not necessarily follow his father's profession, although he usually did so". It would appear, that the Egyptian caste system was like that in Vedic India, where it showed considerable elasticity before it became rigid in historical times. Incidentally, Heredotus speaks well of the priest-hood, composed, according to him, of men highly skilled and of upright character.

As regards the method of warfare, there are significant analogies. Egyptians, at war, were not unlike ancient Aryans, in as much as they indulged in no in-human slaughter, and took prisoners at every opportunity, sparing those who prostrated before them, or otherwise appeared to be defenceless.* This practice accords with the maxims laid down by Manu (about 1000 B.C.) in his famous Institutes. Of course, three of the four conventional arms were unknown in Egypt till after the Hyksos period; for there were no cavalry (and no chariots) and no elephantry there, till comparatively later times. It is in evidence that the horse was introduced by the invading Hyksos in the 2nd millennium B.C., and elephants appear to have never been used in battle by the Pharaohs.**

Some social customs and manners of the ancient Egyptians correspond to those of our forefathers. The art of memory cultivation was perfected almost to our own standards. In medicine, they used purges, vomits and clysters, similar to the recipes of the Atharva Veda. Heredotus mentions that, unlike the Greeks, they paid great respects to age, bowing and touching

* "The Semitic lust for vengeance was foreign to Egyptian dignity." (Otto Neubert, *The Valley of the Kings*, P. 150.)

Moses told his followers: "Thou shalt give life for life, eye for eye, tooth for tooth; hand for hand, foot for foot, burning for burning, wound for wound, stripe for stripe." — An ox goring a man to death, was to be stoned to death.

** As I have mentioned elsewhere, the first time Indian war elephants were used outside India, was in 530 B.C., in the war between Kurush and the Bactrians. Subsequently, the Persian monarchs, and later the Phoenicians, introduced elephants into Africa and Europe.

the knees in reverence, when meeting elders.* They consecrated each month and day to a deity and observed carefully the days of nativity. Through horoscopy, as per Herodotus, they professed to predict a man's life and death, from his birth-chart. In their "Book of the Dead", the Egyptians had their own manual of charms, curses and incantations, strongly reminiscent of our own Atharvan. The Egyptians disliked the looseness and informality of the Hebrews and the Greeks, whom they considered to be barbarians in the same way as the Aryans viewed the modes and customs of the neighbouring ml̥cchas. Their practice was, always, to drink out of brazen, silver, or gold vessels which would not be lip-polluted and which could be polished every day. They wore only linen, which they washed each day. Their priests completely shaved their bodies twice a week, to prevent contaminating the gods. As laid down in our s̥āstras, the priests bathed thrice a day, in cold water. Egyptians never indulged in public kissing nor used any vessels of non-Egyptians nor even ate flesh or food cut by a foreign knife. In their treatment of women they rivalled the Indo-Aryans, among whom women-folk commanded high social recognition. In Egypt, married women were given precedence over men, and sex was no bar even to the throne. In fact, among the Pharaohs, descent was through the female line, a practice reminiscent of certain parts of India which were also recalled to memory by the universal practice, of all lower classes, male and female, going barebodied down to the waist. A newly wedded girl was particularly honoured, an idea, which is enshrined in our Vedas (vide the famous Sūrya-Sōmā hymn).** Herodotus observes that though they usually wore their hair short, the Egyptians allowed it to grow, on occasions of sorrow or bereavement, as we do, even today.

I have adverted to the opinion of Sir Leonard Woolley, that the Egyptians attributed much of their great art and architecture,

* c/f. Manu. "The life currents of an young man tend to flow out of his body when an elder comes ; they attain their normal condition only when he stands up to receive him." (II - 119-121).

** Rig Veda. X 85.

to the "Followers of Horus" (Sūrya) who coming from the East, introduced new crafts and arts into the Nile Valley. According to him, the immigrants brought with them the knowledge which had flourished in Mesopotamia, which had an earlier, and in some ways, a superior civilisation, as I shall describe later on.* The carriers of this one way cultural traffic were the very people from whom the so-called Phoenicians claimed descent, which people were, according to my humble suggestion, none other than the Vedic Panis.

A principal accomplishment, which was transported all the way by sea from Mesopotamia to Egypt, was the art of writing. This must have occurred long before the Mesopotamians invented the cuneiform script, which was a great improvement upon the original pictographs found in the Near East. The cuneiform actually gave a crude syllabary to the Sumerian tongue and this happened long before the Egyptians advanced into their own Hieratic and Demotic styles of writing, as I shall elaborate shortly. In the use of stone for buildings, Egypt seemed to follow Indian precepts, in restricting stone to religious edifices. As Woolley remarks, "there is not in the whole of Egypt a single instance of a dwelling house being built of stone". Of course, stone could be used in basements, in lintels and even in terrace-roofing, but nowhere-else, as in the prescriptions of our "Vāstu-sāstras"; and the fabric of private dwellings could be laid out in brick only. (The Pharaoh was an exception, not because he was king, but because he was a god). In Egypt, to have used stone for walls and partitions in mere mortals' houses, would have been an act of insolence to the gods, as in India, and private stone houses were, therefore, taboo. It is curious, that in Mesopotamia, where even temples, which were made of brick in superstructure (occasionally faced with stone, as a pious fraud) due to the almost total absence of good stone in the area, had their basements built of limestone painfully brought from long distances, thus supporting the theory that stone was a "must" in religious edifices and for royal tombs, at least below the ground level. The practice in Mesopotamia

* Thus, H. R. Hall (Ancient History of the Near East) "On the whole, it is much more probable that Egypt owed more to Sumeria than Sumer to her. The foreign pre-Dynastic race may turn out to be Sumerian."

and in Egypt, was doubtless based on religious scruples, the origins of which could be traced back to ancient India.*

In the realm of astronomy, a rather significant likeness can be seen between India and Egypt. The buildings in the latter country were oriented towards heavenly bodies, as in India : the Sun, the Moon and the five planets were treated as gods who profoundly influenced civil life. Their movements were closely watched and recorded, and the lunar month was adopted as the standard of time, as in ancient India. But the Egyptians did not progress as well in astronomy as we did, although their calendar system, which closely approximated to ours, reached a degree of perfection, so as to serve as a model to the whole of the ancient world.**

To illustrate the plea of a spiritual current flowing out from the East into Egypt, I would like to narrate the story of Pharaoh Ammonhotep IV, or Ichchnaton † as he called himself later on, and who was known to his Egyptian contemporaries as the "great schismatic" or the "heretic king". I had mentioned earlier, how the Egyptian religion, nay, even the body politic, was built upon a strong base of a very powerful priest-hood. In course of time,

* It may be pointed out here, incidentally, that the name for a Pyramid in Egyptian was 'Mer', which sounds very much like the Indian Meru. (c/f the Indonesian and Polynesian 'Marae' or stepped Pyramids).

** The Egyptians found out, at a very early period, that the true year contained more than 360 days, and in the Pyramid text of Pepi II, reference is made to the gods who were born (i.e., their birthdays took place) on the five days that the Egyptians added to the year. The year of 360 days was divided into three seasons, each containing four months, which were called Akhet, Pert and Shemu. Then followed the epagomenal days, or five days added to the year. This was called the vague or wandering year, as the year of 365 days was shorter than the true year, by nearly a quarter of a day. While the civil calendar was based on the lunar movements, the Egyptians, like the Indo-Aryans, followed another cycle or era, based on the heliacal rising of Sirius (called Sothis by the Greeks), and involving a period of 1460 years. In India, our ancients used the Sapta Rishis (Ursa Major), whose cycle was assumed to involve 2700 years.

† A variant reading of this name is given as Akhenaton, which means, "He who is beneficial to Aton."



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BUST OF QUEEN NEFERTETE (Found in an Egyptian tomb)

this hierarchy of priests degenerated, both morally and spiritually, with the evil concomitant of excessive ritualism, plethora of animal sacrifices, and an eternal intrigue for power between this hierarchy and the army. (In fact, one high priest usurped the throne about 1330 B.C.) The royal power was waning and it looked as though a theocracy would replace the Pharaoh. In this atmosphere, was born prince Ammonhotep, of the 18th Dynasty, about 1400 B.C. [The name Ammonhotep* might mean "follower of Ammon"]. When he came to the throne in 1380 B.C., he found the corruption of the Ammon cult so offensive and the political aggressions of the priest-hood so menacing, that he shifted his capital to a place a few hundred miles away, and decreed the abolition of Ammon worship, thus cutting at the root of priestly power. With sublime faith, he declared polytheism a blasphemy, and instituted the worship of one God, whom he called "ATON", and to whom he gave the symbol of the Rising Sun, with his temporal abode in the open plains, instead of in costly temples. The king proclaimed that ATON had revealed Himself to the king, who thereupon appeared in public with his lovely queen (who was a foreigner and an Asiatic), a thing no Pharaoh had ever done before. The beautiful queen, who hailed from the Mithrani kingdom in Asia Minor, probably brought with her the worship of a single god, and the emblem of an universal power. She was made the subject, in part, of the Sun-hymn, which the Pharaoh himself reputedly composed. (He adopted at this stage, the name of Ichchnaton, meaning "lover of Aton"). Queen Nefertete** (whose name is, probably, a corruption

* Also spelt Ammonhophis; strangely enough, he was monogamous, no doubt, at the instance of his beautiful wife. He forbade bloody sacrifices and said "Let men be equal in life as in death." "The faith which Ammonhophis preached, is a faith fit for paradise." (O. Neubert: Valley of Kings, P. 184.) Cruelty to men and animals was made illegal and all men were advised to believe in one God and Truth.

** Often foreign names are adapted into the local tongue in such a manner, as to yield some meaning in the latter. Thus Neshthika became Nefertiti, (Oh! the beautiful one!) in Egyptian; in the same way Annie Besant became Annai Vasantha, in Tamil!

of Sanskrit Neshthika * or Saraswati), persuaded her husband to dismantle a very ancient and potent institution, viz. that of sacred prostitution, which was, perhaps, not without its contemporary Indian parallel. The devotees of 'Aton' were forced to abjure all other gods and to meditate solely on Aton's life-giving properties; the name of 'Ammon' was severely erased from all public inscriptions and his temples were closed, at least, for the time being.

The non-conformist zeal of Ichchnaton led to severe reactions, both at home and abroad. Internally, the powerful priest-hood engineered a silent revolt; abroad, the subordinate kings rose in rebellion, and soon Egypt lost most of her foreign territories. The young monarch was beset with numerous troubles and seems to have met with a sudden and mysterious end, after a rule of only ten years. His widow continued to live, but in retirement and without any power, although, her son-in-law, the famous Tuthankaman, became the next Pharaoh. Aton was soon expelled from his divine kingdom and the old gods were restored to their pristine prestige and power. Ammon-hotep IV was branded as a heretic and his name was removed from all public records, in complete ignominy.

This story is of supreme significance, as the events covered by it occurred shortly after a great religious upheaval had overspread India. Sometime between 2000 and 1500 B. C., the gospel of the Upanishads was being preached in Āryāvarta by sages and rishis, who would rank with the greatest spiritual thinkers and speculators the world has ever seen. This new philosophy, which even according to Western critics, attained sublime heights of religious appeal, deprecated temples and image-worship, ritualism and sacrifices, and the attachment to good-deeds and their promised rewards. It placed its faith in a Supreme Being, (the Parama-Ātman,) and would seek to merge the individual souls, (the Jiva Ātmans,) in the Supreme, through a

* Literally: highest, best, most beautiful, perfect. The Egyptian records are unanimous in her praise; she is shown as lovely, energetic, simple and un-pretentious; "a child of the people," in the words of O. Neubert. The couple were passionately devoted to each other.

process of internal discipline, non-attachment, and self-realisation. I suggest that the 'ATON', of Ammonhotep, was nothing else but the 'ĀTMAN' of these Hindu philosophers, and the Solar Disc, conceived of as symbolic of ATON, was only the sign of 'AUM', with a shining halo round it which we often see in our pictures of worship.* It is clear that Queen Neshtika, who hailed from the land of the Mittanis (of whom more presently), must have carried this new evangel with her to Egypt and converted her august husband to something akin to the 'Vēdānta' school of thought.† It is a pity, that this seed of Upanishad propagation failed to fructify in Africa, but then the soil was poorly prepared, and the sowing was hasty and promiscuous. I should mention, *en passim*, that the identification of ATON with ĀTMAN is not so bizarre, as some may think. To start with, in foreign tongues, it is sometimes difficult to find exact sonal equivalents. ("Vāzhai Pazham," in Tamil, will be difficult to transliterate in most other languages. In Sanskrit it will be spelt and pronounced "Vāla palam," which is the correct appellation, meaning "fruit hanging like a tail.") Further, in pictographs and ideographs, accurate phonetic values are often matters for argument among experts, even to-day.‡

* Flinders-Petrie says of the Aton-Cult; "No such grand theology had appeared in the world before, so far as we know, and it was the fore-runner of later monotheistic religions; it is even more abstract and impersonal and may well rank as scientific theism." What the learned Professor says, will apply equally to the doctrines of the Hindu Vedantism.

† Rogers believes that the religious innovations in Egypt were due to the Mittani Princesses (R. W. Rogers's History of Babylonia and Assyria, Vol. I, P. 110). In the opinion of Otto Neubert, Ichchnaton's idea of the one and the only great God may have had an Indo-Germanic origin. "It was as foreign to Egypt, as Christ's teaching was to prove to Palestine." I may also add the remarks of Tomlin, "It is clear that the worshippers of Aton were chiefly pre-occupied with the beneficence of solar energy. (Further), and this was so marked a departure from Egyptian religious custom as to point to an Asiatic origin, the true temple of Aton was the open air itself. God was to be worshipped in spirit and truth". (Great Philosophers of the East, P. 72).

‡ Hieroglyphic writing expresses only the consonants and this is true also of the Hieratic and the Demotic. It is only as a concession to modern usage that present interpreters of the scripts slip in an 'e' between the consonants. By so doing, the modern readers may not be always sounding Egyptian, as she was spoke in 1700 B.C.

Lastly, pronunciations of [foreign words become, for people with heavy accents, occasions for verbal mutilation. (For example, the simple Sanskrit word "Dhyāna" becomes "ZEN" in Japanese ; the Greeks must transmogrify 'Kshaya Arsha into Xerxes and Kshudraka into Oxydrakoi.) I suggest, therefore, that the "ATON" of the Pharaoh, even if the glyph be correctly sounded, is only a slight corruption of Sanskrit ĀTMAN, as the context of the Egyptian word-coinage amply proves.*

Before I take leave of the subject of the Aryan intrusion into the Nile Valley, I would like to quote an extract from a well known Egyptian religious scroll, known as the Memphite Drama, dated about 2500 B. C. The piece begins with an invocation to god PTAH, who, besides being the Lord of all creation and "the heart and tongue of all gods", happened to be the presiding deity of Memphis, the then capital city. We are told that Ptah, acting in the name of all the gods, "pronounced the names of all things, created sight [for the eyes, hearing for the ears, and breathing for the nose, that they may transmit (their signals) to the heart.....Every divine word came into being, through that which the heart thought and the tongue commanded, for it is the heart that causes every conclusion to come forth, and it is the tongue which announces through the heart.....Thus, all the stations (official positions) were made, and all functions assigned, which furnished all nutrition and all food.....Thus was Ptah satisfied, after he had made all things and every divine word".

The above extract shows that the Supreme One was proclaimed the creator of all beings and as being the embodiment of

* According to the famous Egyptologist, Dr. Budge, the ancient Egyptians, "believed in the existence of one great God, self produced, self-existent Almighty, eternal, who created the (other) Gods, heaven and earth, man and beast. the Sun, Moon and the stars, bird, fish and reptile. Of this God, they never attempted to make any figure form or likeness, for they thought that no man could depict or describe Him and that all his attributes were beyond man's comprehension. On rare occasions, when he is mentioned, he is always called Nethr i.e., God without a name. The exact meaning of Nethr is not known". (May I add, that Nethr is probably the "Nethi, Nethi," famous in the Upanishads?)

realised intelligence, whereby "it came into being". The world is the result of the active operation of a Supreme Will, which is the breath of God. The tongue, (i.e. Speech), is equally emphasised with the heart, "Manas". (Like the Hindus, the Egyptians attributed the power of thought to the heart, rather than to the brain). Let us now do some comparisons. The Christians, for two thousand years, have been told that "in the beginning was the Word and the Word was with God and the Word was God". According to the Bible, the Word became incarnate and dwelt among men. These ideas were, doubtless, borrowed from the Greek philosophers, who used the word "Logos", (in the broad sense in which the Egyptians used the words "heart and tongue"), and identified Logos with God. To Plato, Logos was the agent of Divine energy, the attribute of god's creative power. Heart and Tongue, the Word, Logos, all refer to the same entity viz., Divine Wisdom, in ordered action.

Let us see how the Hindus dealt with "Heart and Tongue" in their speculations. Readers of the Rig Veda will be familiar with the concept of Sabda Brahman, the identification of Vocal Sound with Godhead. In fact, "Vāk" or Speech, was deified in the Vedas as the Goddess of Wisdom and the Mother of the Vedas. In famous hymns, the rishis proclaimed how, in the beginning, there was only Sound, or "Vāk," - emanating from the Supreme Being, and how, in due course, other things were created, particularly, names, forms, and food. (Nāma, Rūpa, Anna). To quote (Rig Veda V - 85), Varuna, (considered as the Creator), is thus described (in Muir's translation).

"In the tree-tops, the air he has extended

"Put milk in kine, vigorous speed in horses

"Set intellect in hearts, fire in stomachs

"The Sun in the sky, and the Sōma in the mountains".

To quote again, (Rig Veda X - 82).

"The maker of senses engendered the waters.....and ancient boundaries were fixed."

“Of comprehensive mind.....is the creator, the arranger and the supreme supervisor.....in whom all the senses are satisfied with food...(and) who is the name giver of the gods”.

One could see from the above extracts, the close parallelism in thought between the Egyptian priests and the Vedic rishis. The ideas are curiously similar. At first there was chaos or nullity; the Supreme Being then bestirred himself and he endowed life, the senses, and the means of sustenance, but before he did so, he created the tongue, or Vāk or Speech, (or the Word, as the Christians would have it). Sabda or the articulated sound, became something eternal, both on the Nile and in Sapta Sindhu. I may mention here that the “Logos” of the Greeks, (i.e. creative intelligence), bears the same significance as Vāk or Speech; the latter is the source of Divine activity, while Logos (which is derived from Sanskrit “Laghu”,* i.e., ordered activity or pursuit of an objective) implies, in Greek philosophy, the creative impulse of the Supreme Intelligence.

* From Skt. Lagh - to follow quickly, to happen immediately and closely; Skt. Laghitha - connected with, attached closely to. (c/f. Laghna). To the Greeks ‘Logos’ carried various meanings, like word, speech, reason, account, reckoning and proportion. Since word or speech came immediately, and earliest, from God, it was named Logos. A speech-writer was called “logographer,” (Logos = word or speech; grapho = to write). To quote Sir John Woodroffe, “Sabda Brahmam, the Sound, Logos, or Word, is the creator of the world of names and forms.” (Introduction to Tantra Sastra, P. 107).

AUTHOR'S CHRONOLOGICAL TABLE OF COMPARATIVE DATES

Date	Aryāvarta	Egypt	Sumeria	Near East	Persia	Greece
6000 B.C.	Pre-Rig Vedic Aryans ; Compositions of ancient rishis, now lost.	—	—	—	—	—
5000 B.C. to 4000 B.C.	Age of the Rig Veda. Aryans in Sapta Sindhu.	Pre-historic period.	—	—	—	—
4000 B.C. to 3000 B.C.	Age of the Yajur and Atharva Vedas.* Aryans move into the Indo-Gangetic plain.	Pre-dynastic period.	—	—	—	—

* The Atharva Veda may be 500 years younger than the Yajus.

Date	Āryāvarta	Egypt	Sumeria	Near East	Persia	Greece
3000 B.C. to 2500 B.C.	(a) Age of the Brāhmanas, the Āryanakas and the Upavēdas. (b) The Indus-Valley civilisation ; (c) Aryans (Panis) march into Sumeria and Lebanon.	I Dynasty (3100 - 2980 B.C.) II Dynasty (2980 - 2780 B.C.)	Founding of the City States. Invention of Cuneiform writing.	Phoenicians start trading with Egypt.	Neolithic civilisation and early copper age	—
2500 B.C. to 2000 B.C.	1. Height of the Indus Valley culture. 2. Establishment of the Solar dynasty of Ikshvāku at Ayodhyā. The Rāmāyana episodes.	Old kingdom - The age of the Pyramids. III to VI Dynasties 2780-2258 B.C.	Sargon of Agade founds an empire.	Pharaoh Snefretgots cedar-wood from Lebanon through the Phoenicians.	—	—

2000 B.C. to 1400 B.C.	1. Lava & Kusa lead Aryan clans west- ward across the Indus.	1. VII to X Dynasties 2258 B.C. to 2052 B.C.	UR-Nammu period. III Dynasty graves.	Establish- ment of the Aryan kingdoms of the Near East; Hittite, Mittani & Kassite rule in the Near East. Hattusi- lis conquers Syria.	—	First Greek speaking people arrive in Greece by sea. (Circa 1500 B.C.?)
	2. Middle Kingdom XI to XIV Dynasties. 2134 to 1680 B.C.				—	
	2. Age of the Upanishads.	Rule of the Hyksos 1720- 1570 B.C.	Hamu- rabi rules Baby- lon- C. 1780 B. C.	Habirus (Hebrews) attack the Phoc- necian City states.	—	
	3. Great king- doms of the Lunar Dynasty established Mahābhārata War. (1440 B.C.?)	New King- dom; XVIII Dynasty 1570-1349 B.C. (Egyptian empire at its height).				

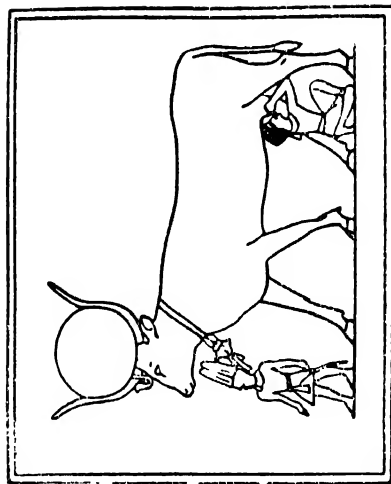
Date	Āryāvarta	Egypt	Sumeria	Near East	Persia	Greece
1400 B.C. to 800 B.C.	Age of the great grammarians Sakātāyana Yāska, Pāṇini etc. The Aindra system of grammar replaced ; Manu writes his famous Institutes ; kingdoms of Kāsi, Mithila etc. flourish.	XIX to XXIII Dynasties 1349 B.C. to 830 B.C. Ramesses the Great signs treaty with Khētās, 1269 B.C. Seshank invades Syria 930 B.C.	Rise of the Assurs G. 1380 Babylon falls to Assurs. Fall of Kassite and Mithrani kingdoms to the Assurs.	Hittite empire at its height under Suppilulimas ; Hattusilis signs the Treaty of Kadesh with Egypt (1269 B. C.) Fall of the Hittites. (Circa 1200 B. C.) to the Phrygians. Lesser Hittite States in Syria founded.	Introduction of Iron into Persia from India-	Sack of Troy C. (1190 B.C.?) Dorian invasion of Greece. Homeric epics take shape 900-800 B.C.

800 B.C.	Rise of Jainism to and Buddhism.	XXIV to XXV.L.	Assurs conquer Syria.	Syria under foreign rule, first of Assurs and then of the Persians.	Rise of Persian kings - Cyrus & Cam - byses.	Greece invaded by Darius.
500 B.C.	Mahāvīra and Buddha (Circa 650 to 550 B.C.).	Dynasties (730 B.C. to 525 B.C.)	Assura-Banipal and Nezzar 669 to 562 B. C.	End of the Lesser Hittite kingdoms, 725 B. C.	Darius conquers Egypt, and Sind	
	Age of the Dharma Sāstras and the Grihya Sūtras. Invasion of Ceylon by Aryan tribes.	Persians conquer Egypt 525 B.C.	(Cyrus conquers Babylon 539 B. C.)		C. 525 B. C.	
	Beginnings of Aryan contacts with S. E. Asia by land and sea.		End of Assur rule		Attacks Greece.	
	The Grammarian Vyādi writes his "Samgraha".					

Date	Āryāvarta	Egypt	Sumeria	Near East	Persia	Greece
500 B.C. to 200 B.C.	The rule of the Nandas & the Mauryas. The period of the minor Grammarians [Kātyāyana (Vararuchi) and Patanjali] and Kautilya's Arthasastra (C. 325 B.C.) Invasion of Alexander C. 325 B.C.-Mauryan Empire starts. Asoka's missions to foreign states. The Tamil work Tolkappiyam is written. (circa 400 B. C.)	Egypt under Persian rule till 330 B.C. Invaded by Alexander : Ptolemies of Egypt rule till the Roman conquest.	—	—	Persian Empire at its height. Xerxes, Artaxerxes etc. Invasion of Alexander and death of Darius III	Greece repels the Persians. Colonies established along the Mediterranean : Marathon 490 B.C. Thermopylae 480 B.C. Pericles and the Athenian empire : Peloponnesian war ; 431 B.C. : Plato and Aristotle 427-300 B.C. Greece conquered by Macedonia, 330 B.C.



TO FACE PAGE 51



- (1) THE MACE HEAD REFERRED TO IN THE TEXT,
- (2) THE PICTURE OF THE DIVINE COW DESCRIBED IN THE TEXT.

NOTE TO CHAPTER II

In the foregoing chapter, I had adverted to the "diffusion theory" of certain Egyptologists, like Elliot-Smith. This theory presumes that, thanks to its age and early maturity, it was the *Egyptian* culture, together with the hall-marks of its religion, which got diffused in the ancient world, particularly the Mediterranean area, the Near East and Āryāvarta. I have argued *contra* to this supposition, and it seems worth while to reinforce my suggestions with some epigraphic evidence, gathered from the Nile Valley.

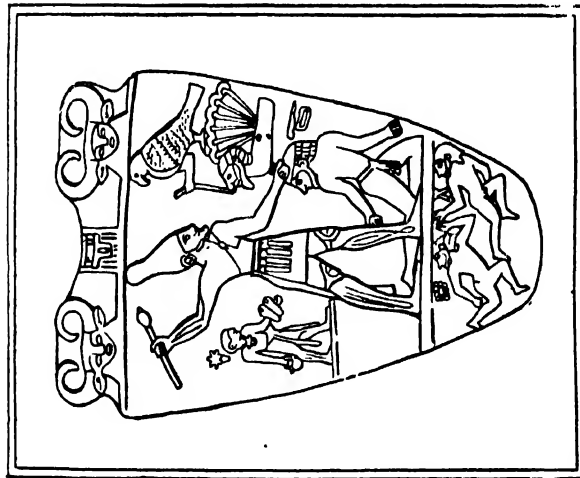
In the following four pictures, copied from Egyptian archaeological remains, I venture to suggest that there are early traces of Indo-Aryan influences in Egypt, which would go to show that if there was any diffusion of religion, it was *from India towards Egypt*, and not vice versa. I have mentioned elsewhere, that the Egyptian kings were strong protagonists of agriculture, but they were also vaguely identified with the use of the plough in Egypt. In the first of the pictures, shown herewith, of a mace head, dated 3000 B.C., the picture is of the Egyptian king, using the plough. He is assisted by a person who is, probably, scattering the seed, to be worked into the ground. This picture accords with the general practice, in ancient India, of the king annually turning the first sod and planting the grain on an auspicious occasion, to the chanting of appropriate mantras.

The second is the picture of a cow, being milked with the help of a human being. The story of Pruthu, (after whom the world is named as Prithvi), is fairly well known to students of Vedic lore. According to an ancient Indian legend, there was a wicked king named Vēnarāja who was killed by the rishis for his inextinguishable sins and the world became kingless and infertile. The rishis prayed for a new king and lo! from the right arm of the dead king, Pruthu came out, in all his splendid youth. As the world

was barren and there was no food for the people, Pruthu addressed the Earth to yield of its best, without ado. The Earth, however, took the form of a cow and started running away; Pruthu pursued the cow and made it surrender, whereupon the cow said that she was prepared to yield food in plenty, provided Pruthu could find a calf. Pruthu asked Swāyambhuva Manu, the progenitor of all mankind, to function as a calf, whereupon the Earth began yielding copiously grains, fruits and vegetables. It will be seen in this picture, how the ideas of the Earth and the cow are combined, since the cow is seen carrying the Earth in its horns. The Earth is also symbolised by the hooded serpent or Nāga (which is not a native of Egypt). (Indians are familiar with the story, that the Earth is borne on the head of a big serpent, Ādisēsha.) In the Rigveda (X, 189), the poetess called Sarpa Rājñi, (Serpent-Queen), is identified with the presiding genius of the earth by Sāyana. The Satapata Brāhmana, referring to this Rik, explains "The Earth itself is Sarpa Rājñi". (II.1.4) The Aitarēya Brāhmana, (V. 4. (4)) gives a similar interpretation. It may be recalled that the Babylonians worshipped the earth *as a snake*.

Let us turn to the third picture, belonging to one of the earlier kings, (circa 2500 B. C.,) which is found in a sculptured green ceremonial palette of the IVth dynasty. It seems to me that this is a picture concerned, in all probability, with Vedic mythology, and that the King, or Indra, is shown here as killing an enemy, (Vritrāsura), through his Vajrāyudha. Behind Indra, there is a figure which is taken by some European historians (Budge, for instance) to represent a slipper bearer of the deified king, who is glyphed as Narmer-Menu, the legendary founder of the 1st dynasty of Egypt. I feel, however, that it portrays a rishi, who is probably endowing, through his prayers (as sung in the Rig Veda,) sufficient strength to Indra to kill the demon enemy. The rishi wears typical Indian dress, including an amulet round his neck. He carries a kamandalu pātram in his right hand, and in his left, he carries what are obviously wooden sandals and the cleft stick, usually known as Brahma Danda.* On the other side of Indra, is

* Alternatively the stick may represent the 'sruk' or the sacrificial wooden ladle, which is supposed to ward off enemies through its magical power.



TO FACE PAGE 92

- (1) THE EGYPTIAN PALETTE REFERRED TO IN THE TEXT
- (2) THE PICTURE OF THE DIVINE COW CARRYING THE DEAD KING TO THE SKY WORLD DESCRIBED IN THE TEXT.

a depiction of what is, apparently, an interesting Vedic motif. The Rig Veda contains several hymns, addressed to the falcon, or the hawk, which is supposed to have brought the Sōma plant, from the high Himalayas to the Aryan worshippers. I suggest that this side-piece is a representation of this idea ; we observe a king, (or the Yajamāna), in whose mouth the Sōma plant is being put by the hawk. Below Indra, (or the deified king, Menu), we find prostrated figures in a state of nudity, who may perhaps represent the opponents of Indra, like Nimuchi, or the Dasyus. At the top of the ensemble, appears Aditi, or the Divine Cow, represented by the Cow-head with curving horns. Aditi is *Dēva-mātā*, *pār excellence*, and is the mother of Indra.

We can now turn to the fourth picture, where Hathor or the Divine Cow, is represented as carrying a dead king to the sky-world. I had mentioned before that the Pharaoh became an 'ASAR', (Egyptian for Asūrya or Greek Osiris), after his death, although his body was kept mummified in gigantic funerary receptacles, the Pyramids. To the ancient Egyptian, a topographical heaven was a cardinal article of faith and its geography was mapped up, with the meticulous precision of a guide book. Indian sacerdotal literature is also loaded with similar details, of both the heaven and hell, so graphically described in the Brahma Sūtras. The ancient Egyptians thought that the Celestial Cow, (Hathor) was a vehicle for conveying their distinguished dead to the other world. In Indian mythology also, Aditi is so described. [It may be incidentally mentioned that, as a member of the Solar line, the Indian king was identified with a series of solar deities, viz. the Ādityas or sons of Aditi. In the same manner, the Egyptian kings traced their ancestry to Horus (i.e. Sorus or Sūrya) whose foster mother was Hathor, (or Savithār), usually represented by a deified cow]. In Indian mythology, Aditi, personified as a cow, helps the dead to cross the Vaitarani river and it is for this purpose, that among the orthodox, a dying person gifts a cow, to help him on this difficult voyage, across the dark and noisome Vaitarani. I suggest that this picture is illustrative of this idea, the Vaitarani, river being symbolised by a small boat, carried by the dead king in his arm. Behind the king, rides a bird with a human head. This could be identified with the divine being, familiarly described as

‘Suparna,’ (or ‘golden winged,’) in Vedic literature, as for example, in the following verse :—

“सुपर्णे विप्राः कवयोः वचोभिः

एकम् सन्तम् बहुधा कल्पयन्ति”

In this picture, the king is guided to the sky world by Prajāpati or the Creator, in the form of a bird. The Egyptians called a man's soul “Ka”, and identified this soul with the Supreme. In the Rig Veda also, the Unknowable God is described as “Ka” and there is a whole hymn addressed to “Ka”, (otherwise known as Prajāpati or Hiranyagarbha). The Vedic conception of the Unknown God, as “Ka”, and the Egyptian idea of the human soul, as “Ka”, bear such unmistakable resemblance, as to point to an actual commingling of religious myths:

CHAPTER III

THE ARYANS IN SUMER AND CHALDEA

I had referred, earlier, to Sumeria and the Sumerians. Sumer is roughly the land enclosed by the Euphrates and the Tigris, 'otherwise forming part of the Fertile Crescent. Of the origin of the Sumerians, (about whom much was not known till a hundred years ago,) nothing definite has been established by Western historians. In the words of one of them, "the Sumerians, whatever their precise racial affinities, were different from the Semitic people, who superseded them; they were an essentially creative race, whereas the Semitics.....were pre-eminently copyists. Even the cuneiform system of writing, with all its complexities, is unequivocally Sumerian in origin. The population of the area, (i.e. Mesopotamia,) was an amalgam of Sumerians proper, a distinctly non-Semitic race and of Akkadians, who showed Semitic affinities"*.

The Sumerian religion was largely an astral one and was foisted on Akkadian Babylon, where the names of gods were covered by the same ideograms, although the pronunciations were different in Sumerian and in Semitic. Ethnically, the early Sumers, (as well attested in their statuary,) were quite different from the races surrounding them, at their first appearance in Mesopotamia, viz., the Semites and the Turanians. They are suggested, by some leading historians, (Madame Ragozin, for example) as being definitely South Indian in type; in other words, they had the usual Aryan features, with some dilutions, arising from pre-Aryan racial admixture, acquired in lower Deccan and Malabar. In the impressive words of the French savant, Francois Lenormant "It is, by no means

*Hrozný says "The Sumerians composed, probabaly, of the Indo-European and Altaic elements, starting from some point in the Kirgiz steppes began to infiltrate into Babylonia. In the Jamdet Nasr period, they created the splendid Sumero-Akkadian *city culture*; a well developed plough agriculture; a higher type of metallurgy, the picture, and later, cuneiform writing and a finished world view based on astronomy and astrology. (Anc. Hist. etc. P. 237).

improbable, that the Sumerians were an Indian race, which passed by land and sea, into the valley of the Two Rivers. It was in their Indian home, perhaps in the Indus Valley, that their culture developed. There, their writing might have been invented, progressing from a pictorial, to a simplified ideographic, which later on, in Babylonia, took on its peculiar cuneiform appearance, owing to its being written with a square-ended stylus on soft clay. There is little doubt that India must have been one of the earliest centres of civilisation." Sumer may have, thus, been derived from Su-Mēru, the beautiful mountain conceived as the seat of the gods. A high mountain peak, now in Afghanistan, was actually named Su-Mēru, (the great Mēru,) by the ancient Aryans, who worshipped it as the seat of the gods.

Will Durant, the eminent American philosopher and historian, is less positive on the subject. He says,* "Despite much research, we cannot tell of what race the Sumerians were. Perhaps, as the legend says, they sailed in from the Persian Gulf and slowly made their way up the Twin Rivers. The funerary remains show them as a short, stocky people, with a high straight non-Semitic nose. They clothed themselves in linen and fine wool. The women, except the servants, draped their garments over their left shoulder, while the men tied them round their waists and kept their upper body bare. Bracelets, necklaces, anklets and finger rings made the ladies of Sumeria, as else-where, the show-windows of their husbands 'prosperity'." About 2300 B.C., the Sumerian priests, in trying to reconstruct the history of their nation, created the Story of the Flood, and formulated lists of their kings, going back to over 400000 years before the devastation! As a matter of cold fact, the archeological and other evidence would give the Sumerians a historical past traceable, perhaps, to 3500 B.C., at the earliest.

We can take it as a well established fact, that the country known to-day as Iraq, was peopled from about 3500 B.C. by a race who were later called Sumerians, who were non-Semitic and were not native to the soil. By about 3000 B.C., the Sumerian

* 'The Story of Civilisation' Ch. VIII, P. 118.

civilisation was well-formed and reached its zenith soon afterwards. In circa 2600 B. C., however, centrifugal influences gathered sway and Sumer was divided into a number of petty states, each with its local god. About 2500 B.C., the kings of Chaldea at Ur subdued all other kingdoms and became sole rulers of Sumer. The rule of the Chaldeans lasted some hundreds of years, until internecine strife paved the way to a foreign conquest, this time by the Akkadians, who established themselves in Babylon. The question then is, who were these people, who intruded into the famous River Valley and built up a civilisation, rivalling in age and maturity those of Egypt and of Vedic India? My suggestion is that these intruders were people of Aryan stock, who left the Indus basin in troubled circumstances, and were forced to set up a new home, in a far-off clime.

Let us now examine the arguments in support of my theory. I have already mentioned the ethnic resemblance, noticeable between the Sumerian and the ancient Dakshinis of India. There are other evidences. The word 'māna', which in Rig Veda meant a definite measure, of gold for example, was used in the same sense by the Babylonians and the Chaldeans. (The word was later Latinised into mina). In the ruins of ancient "Ur" (or Uruk, capital of the Chaldeans), were found pieces of Indian teak. The Babylonian name for cotton muslin was "sindhu", a fact which, incidentally, gives a clue to the very ancient age of the Indian cotton weaving industry. As mentioned earlier, the Bible records certain rare articles of trade, (like ivory, apes, pearls, peacocks, incense and hardwood) in King Solomon's time, (circa 900 B.C.,) as being imported from India, the very names of these articles being written in Hebrewised Sanskrit. Dr. A. C. Das thinks that there is a close connection between the Cholas and Mesopotamia, and that the name Chaldea is only a corruption of the Indian Choladesa*.

It is one thing to find extensive commercial contacts, but it is another to derive there-from, the migration of peoples into lands situated far from each other. Luckily for us, we have the unique

* He also derives Sumeria from Sanskrit "Sa-maru" i.e. land adjoining deserts. (A. C. Das: 'Rig Vedic India').

advantage of having a store of the very information which is needed for the purpose, in the history of the Aryan people known as 'Panis', and who can be identified with the Punics of the Greek writers. Historians have, for a long time, been puzzled about the origin and the racial affinities of the so-called Sumerians. They admit that, shortly before or after 3000 B. C., there was a serious influx into Mesopotamia, of a strange people from the East, who came both by land and by sea, and who foisted themselves on the local population by peaceful penetration and ultimately, became the ruling race of the land, till such time as the rise of the Akkadian Semites. The new people were highly gifted; their pottery was aristic, with polychrome decorations and they were admirable carvers in stone and developed the art of writing on walls and filling them with painted designs. It is true that, after a supremacy of about 1500 years they fell from political power, but meanwhile, they had formed a rich amalgam with the local population and greatly contributed to the future greatness of Sumeria, in the times of the Akkads and the Assyrians. Not only this, but an offshoot of this race moved westward into Syria and Lebanon and established themselves all over the Mediterranean littoral, as the Phoenicians of subsequent history.

Let us now see who the Panis were and what evidence exists to connect them with the early Sumerians. The Rig Veda depicts the Panis as a rich community whose members, however, failed to propitiate the gods by appropriate sacrifices, and to please the priests with adequate 'dakshina'. They were generally disliked as a consequence, and prayers were often sent to the gods to afflict them with disease and dispersion. The Samhitās decry the Panis as niggards and wolves. In one passage, they are described as 'bēkanatas'* or usurers; in another, they are clubbed with the Dasyus, the hereditary enemies of the Aryan race, and styled "mrdu-vac" i.e. of soft and hostile speech. In two passages, they appear as Dāsas, (the Dahae of the Greeks) an Aryan clan outside the pale of orthodoxy. Roth derives the word "Pani" from 'pan', to barter, and thinks that the unsavoury reputation of the community was due to its notorious propensity to drive hard

* Commented on, in The Vedic Index Vol. II.

bargains in trade. It is generally regarded that they were Aryans, who were non-worshippers of some of the gods, in favour with the rishis who composed the Samhitās. It is mentioned in the Rig Veda, that Brbu was the chief of the Panis, but other names such as Dhuni, Varchin, Sambara, etc., are mentioned as leaders of the community, which was considered by the rishis to be mean-minded, given to ill-treating their womenfolk, and to cattle-lifting.

It is clear from what has been mentioned by me, that there was, in the region now known as North Punjab, Kashmir and Afghanistan, a powerful and enterprising community, ethnically and by broad religious heritage Aryan, but afflicted with impious practices, devious commercial methods, and excessive materialistic outlook on life. The 'Panis' were, what were technically known to the rishis as Vrātyas, i.e. fallen Aryans, who were best moved away from their original homeland, if they could not be reclaimed by a process of purification and conformist oath-taking, known as "Vrātyastōma", whose details are elaborated in the Sāstras*. That these Panis were great sea-goers, is borne out by various Vedic references to maritime expeditions, carried out in ships with large sails and carrying up to 100 oars. The Rig Veda contains prayers addressed by ship-wrecked sailors to Indra. As Wilson remarks, "The Rig Vedic Aryans were a maritime and mercantile people; not only are the Sūktas familiar with the ocean and its phenomena, but we have merchants described as pressing earnestly on board ship, for the sake of gain". It is a permissible surmise, that these ancient, but refractory, Panis found it to their advantage, to embark on foreign adventures, even if they were not physically driven out from Sapta Sindu, as some authors would surmise. To begin with, they seem to have sailed round Peninsular India, establishing colonies *en route* and in Ceylon. The Rāmāyana, (whose episodes may be dated about 2000 B.C.,) mentions 'Kavātapura', as the spacious and wealthy capital of the

* Brahmin families, who for three generations, had failed to recite the Gayatri mantra, became Vratyas — The Atharva Veda, (XV, I) gives some lively pictures of vagabond Vratyas "travelling in a bullock cart with concubines and musicians, messengers and footmen and professing Saivaite magic with fluency."

Pandya empire, which was probably a creation of Pani enterprise. Lankā itself was peopled by a flourishing Aryan community, (opprobriously called Rākshasas), who, although owing allegiance to Vedic deities, yet were alleged to have broken all the injunctions (including moral ones) of the Vedic faith, through cruelty, deceit and impurity. It may be, incidentally, emphasised that the so-called Rākshasas were of Aryan stock, and that Rāvana himself, (the greatest Tapasvin of his age,) was descended of Kasyapa Rishi, the legendary son of Brahma. It is very likely, therefore, that the Lankā rulers were themselves "Panis", as were, probably, the Pandyan kings*, but there must have been some racial intermingling, at lower levels, with consequential adverse changes in physical characteristics and social customs and manners.

Herodotus calls the Phoenicians, the "Phoinix", and the race was subsequently known as "Punic", to the Romans. Apart from the correspondence in names, there was a remarkable similarity in the Sumerian and Babylonian religion, to that of Āryāvarta. This remark is subject, of course, to the caution that the correspondence went by contraries occasionally, as the "Panis" being schismatics, if not recusants, not infrequently inverted the role of the Vedic deities to suit their own theology, which was unorthodox and hostile to established tenets. For instance, in the Vedas Indra was the Supreme God, while his arch enemy was Vritra, or Ahi, the evil serpent, who "stole the cows",** held up the showers, and generally spread famine among the faithful. The Panis, however, elevated Ahi to the role of the Father of the Heavens, and introduced his cult in Babylon, under the name of "Sarpanātha" (written, in cuneiform, as Sarpanathu). Ahi was also worshipped in other cities under a name, which is ideographed as "Ea," in Sumerian, but whose phonetic value must be a corruption of Ahi.

However, the Panis who emigrated to the Fertile Crescent, from the heart of Āryāvarta, needs must mould their religion on the basis of their parent creed, with the result that their cosmogony, theogony, and allied sacerdotal sciences like astronomy,

* Colonel Tod thought that the Pandiyans were descended of Pandu, King of Hastinapura. (Annals of Rajasthan).

** The rain laden clouds.

bear an unmistakable Aryan stamp. Not only are the names of Gods similar, (as I shall show), but religious thought also reveals parallelism. The Babylonian pantheon was presided over by Ahi, (or Ea,) as already mentioned; below him was Ila, whose Vedic counterpart is presumably Ila*, son of Manu Vaivasvata. According to Purāṇic legends, Ila entered the forbidden region in Himalayas, (called the Saravana grove) sacred to Sankara and Pārvati and was promptly transformed into a female and was thereafter called Ilā. It is significant that the Sumerians gave such a high place, in their pantheon, to an offspring of Manu, thus revealing the importance which they attached to the latter, as their own ancestor, as I shall explain. The next God was Bel or Baal, who was also worshipped as their national divinity by the Phoenicians (i.e. Panis); he should be identified with the Indian Vala or Bala, a surname for Sūrya;** but whose divine attributes, as portrayed in the Vedas, got so malignantly exaggerated in Sumeria and Phoenicia, that *Baal* became the god of terror, retribution, with an unquenchable thirst for bloody sacrifices. Next, in order, came Anu (or Dahanu, as he was called by the Babylonians), the Mesopotamian version of the Vedic 'Dahana' or Agni. Mention is also necessary of the god, ideographed as "Enlil," (the God of the Winds), who is doubtless "Anila" or Vāyu, of the Vedas. A prominent Sumerian deity was Oranna, (Greek, Ouranus), the Fish-God, the counter-part of Vedic Varuna, who was often pictured, in our Purāṇas, as having the body of a fish below the waist. Many stone statues, found at Nineveh and Babylon, represent the minor divinities as half-man and half-beast or bird, often furnished with wings, to symbolise the celestial character of the original. This bird motif is reminiscent of the falcon or "cyēna" of the Rig Veda, who was the carrier of the Sōma plant from its divine

* The Rig Veda mentions a region called Ila, (R. V. III, 23(4), and adds that it was so cold that an year there was called 'hima' (R. V. II, 1(11)-). The Satapata Brahmana indicates that Ila was in the Himalayas and was, probably, the Kashmir Valley. In the Brahmana, Manu's daughter is also called Ila or Ida, the mother of Pururavas. In Vedic language Ila-gola meant the globe or the Earth (Ilika).

** Vala is mentioned in the Rig Veda, (IV, 33, 34, 35, 36, 37) and identified with the Sun, by Sayana.

abode to the sacrificial ground ; the Vedic altar was also shaped in the manner of a falcon with spreading wings. The half-man half-lion statues, found in the Near East, probably depict the awe-inspiring Nrisimha, an avatar of Vishnu. There are other gods and goddesses in the Sumerian pantheon, but it will be tedious to list them and trace their Vedic prototypes. I should repeat here that there are differences of opinion about the phonetic value of some ideographs. Further, the Sumerians had the trick of eliding the first syllable of some names ; for instance, the Moon-God was SIN, i.e., Sanskrit, SASIN.

The Babylonian cosmogony bears, in its main features, a striking similarity to Vedic concepts, as would be proved by a resume of certain tablets, discovered by L. W. King in Mesopotamia. The first tablet describes, in language strongly suggestive of the Vedas, "of the time, when the heavens were not and no planets and stars, and before the gods came into being and when the deep waters were the source and origin of all things". This primaeval watery mass was personified by two deities, the male Apsu, and the female Tiamat, (also read as Tammaz,) whose two children were called Lakkma and Lakhmu, and their grand children Anshar and Kishar, from whom were descended all the familiar gods, Anu, Enlil, et al. The other tablets mention that Tiamat became jealous of her own offspring and created a brood of monsters, to devour the former. The gods discovered this plot, and elected one of themselves, Marduk, as their leader. Marduk faught Tiamat, cut her into two halves, which respectively became the heavens and the earth ; the stars were then created and the Moon appointed "to determine the days". This Babylonian legend was largely created out of a practically identical story, current among the Sumerians.

Let us now trace the Vedic source, of these legends. The Rig Veda, (X-190), gives the following version :—

"From the kindled heat (Tapasā), Right and the Cosmic Order (Satya and Ṛta) were born and then, darkness and watery flood ; from the watery flood the coursing year was born, disposing day and night, the ruler of all that close their eyes (i.e. sleeping beings). And in their order, the Creator formed the Sun, the

Moon, the Heaven and the Earth, the regions of the air and light". As Dr. Radhakrishnan observes, water was said to develop into the World, through the force of time etc. The water itself is derived from chaos, or night or Tamas. God is said to be the Creator of chaos or Tamas, in our sacred texts.

The Mesopotamian legends seem to embody in them, not only the outlines of Vedic cosmogony, but also the struggle between the gods and the powers of darkness, (of Vrittra and Ahi, against Indra and Prajāpati). In the Rig Veda, Indra slays the mother of Vrittra, along with the latter and throws them below the water (R. V. I. - 32). Like Vrittra and Ahi, the sons of Tiamat are all snakes or dragons in the Babylonian account. Babylonian Apsu (Waters) is the Vedic Apsu or Varuna, the Lord of the Waters, while Tiamat or Tammaz is the Sanskrit "Tamas", which means darkness and chaos. As regards Marduk of Babylonia, he has his alter-ego in Rig Vedic Mardika, (R.V,IV-18) who opposed Indra and was even said to have killed Indra's father, "Dyāvā" (or the Sky). For this reason, he was treated with contumely in the Vedas and characterised as a malevolent spirit. It is rather remarkable that he was elected as the leader of the gods in Sumerian myths and made to fight the spirits of darkness. It is a legitimate surmise that like Ahi, (EA), the serpent god, Mardika (Marduk), became the champion deity of those recusant Aryans, like the Panis, who opposed orthodox Indra-worship and the Sōma sacrifices.

It will be just as well, if I were to dilate a little more, on the conception of heresy, or Vrātya, as found in Vedic literature. As I had mentioned earlier, the Panis should be considered as Aryan non-believers who, after sojourning, for sometime, in South India (and perhaps Ceylon), had migrated in large numbers into the Fertile Crescent, sometime about 3000 B.C. A Vrātya is included in the list of victims in the Purusha-mēdha and his status is fully described in the Atharvan and the Pancha Vimsa Brāhmana. Vrātyas are described as "hīna," i.e., depressed and degraded Aryans, also known as garagir. According to the Brāhmana, these Aryans, although unconsecrated, spoke the tongue of

the 'dvijas' but they found it difficult to articulate correctly the Vedic texts and were addicted to a Prākṛit (i.e., colloquial) form of speech. Although un-initiated into the orthodox faith, they had their Arhants (saints) and Yudhas (fighters) (Sanskrit : Yodhya) who claimed correspondence with Brahmins and Kshatriyas, in status. That the Vrātyas were really Aryans, but outside the pale of Brahminic culture and practice, is borne out by the remark that they were said to have failed to practise agriculture, (as good Vaisyas should,) or observe the rules of Brahmacarya. Despite all those signal disabilities, they were allowed to rejoin the orthodox communities, by performing expiatory rites and certain severe penances, upon which they were treated with special consideration, as brands, plucked from the burning. In appearance also, they perhaps differed from those of the pure faith, as the following citation from Vedic literature would indicate. Their principal householders (grāmanis) wore a tilted cornate turban, carried a whip, or a short stick, donned black garments and rode in small rough wagons, which could travel cross-country. The grāmanis also wore a necklace of small silver coins (nishkas), and pointed shoes and skin sandals of variegated colours and were generally of nomadic habits. Their original home was, so far as can be ascertained from the rather obscure references, in the north-west of Sapta Sindhu, perhaps on the banks of the Indus and the countries further north like Kāmbōja (Kohistan) Vahalika (Balkh) and Vanayu (Wana Valley). It will be clear to those, who are familiar with the physical appearance, costume and habits of life of the peoples of the trans-Indus regions in the north, and their representatives in the south, usually associated with extortionate money-lending, how little things have changed with them since the time of the Vedas. It is also not a matter of surprise to us, that the Vrātya Panis who emigrated to Sumeria, showed such pronounced deviations from orthodox religion in their practices in their new homeland.

To resume the thread of religious analogues between India and Mesopotamia, I would turn to the Epic of the Great Flood, the theme of which is common to more faiths than one. The story of Manu and the Fish, as narrated in our Brāhmanas, is

well known.* The Father of the human race, once saved a fish from death. The fish, (which was really a Dēva) warned Manu about a forthcoming deluge and promised to rescue him from that danger. Before the Flood came, Manu, on the advice of the fish, had provided himself with a boat. As the waters rose, following incessant rain, the boat was towed by the fish to a high Himalayan peak from which Manu descended, after the waters receded, and in due course propagated the human race.** Names such as Manoli, and Mansarovar in the Himalayan regions, attest to the probable *locale* of these incidents, which might not have been entirely legendary. The Panis, no doubt, took this legend with them into the Valley of the Twin Rivers, where it is recorded (on tablets) as the Epic of Gilgamesh, a king of Uruk, who claimed to be a descendent of Shamash-Naphistim, the hero of the Flood myth, in its Sumerian version. The Sumerian story goes on to say that Naphistim built himself a big boat of six storeys, (120 cubits long and 50 high) in which he put himself, his family, his cattle, and all manner of beasts, when the threatened storm broke out and raged for 7 days and nights. When it abated, Naphistim sighted land "on the mountain of the land of Nisir", and disembarked there and offered sacrifices to the gods, "who flocked like flies."†

The remarkable fact about this Sumerian legend is, not that it should follow, somewhat loosely, the Manu episode, but that it is copied, almost verbatim, by the authors of the Bible.‡ That the Sumerian story had an Indian base, can be inferred from the

* The flood is referred to in the Atharvan, while the Rig Veda is wholly silent on it - Dr. A. C. Das thinks that the flood must have occurred in between the composition of these two Vedas (Circa 3500 B.C. according to my chronology).

** Multan (or Moolastan) is associated with this phase of Manu's activity, in Indian tradition.

† The Gods apparently relented in their resolve to destroy mankind, especially because it would mean the total loss of all future sacrificial food for themselves!

‡ The Bible also copies the 'creation' story (Bk. of Genesis) from the Babylonian Epics. In the latter, creation took place after a cosmic struggle. In the Genesis, it is the work of God.

fact that Naphistim is said to be a descendent of Shamash, who was the first creation of God. There is some uncertainty if the pronunciation of the ideograph, as Naphistim, is phonetically correct. But, rather startlingly, it accords, (if we make allowance for the vagaries of a foreign language, written in unfamiliar ideography) with the name appearing in the Vedic story. The Manu legend records, that Manu had a son called Nabha Nedhistim* whom his father overlooked in the division of his properties, probably because of some reprehensible heterodoxy in the offspring. Nedhistim then took refuge with the family of the Āṅgīrasas, who solaced him with the gifts of many cows, specially as a tribute to his poetic gifts. Curiously enough, the Zoroastrian Avesta contains the same name, (spelt Naba Nezdishitim,) as that of an ancient prophet of the Asuras, who seems to have defied the Dēva worshippers. In view of the well-known fact that most important Avestan legends were borrowed (after suitable trimmings and inversions) from the Aryan sacerdotal literature, this coincidence in the names of the Zoroastrian, Sumerian and Indian heroes of the Great Flood tales, supports the assumption that the Sumerian Naphistim was only an echo of the Vedic Nabha Nedhistim, a name, which had travelled to Mesopotamia along with the Vṛātya Panis, who doubtless delighted in making a hero of a recalcitrant son of Manu**. The word Shamash, described as the father of Naphistim, is rather difficult of interpretation, for it is one of the names of the Sun, in Chaldean. In Sanskrit, Nabha means the sky and the Moon is called Nabhas-Chamasa (Cup in the Sky). Shamash may, therefore, be a substitution for Nabhas Chamasa. At this point, I may mention that, there is another reading of the legend of the Flood (as shown in the tablets), where the name of the hero is read as Ut-Naphistim and also Zia-Sudra (Jaya Sūdra ?), and the Sun is referred to as UDU. In Sanskrit, UDU

* Nabah = Biblical Noah; Nedishta means literally, "next, nearest" (to Manu).

** The Avesta copies almost exactly the Manu legend. The Ahura Mazda asks Yima to build a 'Vara' or enclosure with the following words "Into the Vara, thou shalt bring the seeds of men and women, the best on the earth; also the seed of every kind of cattle, etc., two of every kind to be kept inexhaustible there."

means a star ; the Moon, being the lord of the stars,* might have been given the name of UDU, by the Sumers. Here, there is a possibility of confusion in nomenclature, since UDU, in Sumerian, usually refers to the Sun.

Sir L. Woolley admits that the Sumerian religion was not autochthonous, but was brought by the early immigrants with traditions and beliefs already formulated. It would seem that the religious practice of Sumer and Chaldea closely resembled that of the Indo-Aryans, in as much as it began and ended with an invocation and a sacrifice. The office of priest was held in high regard, as in India, and it tended to be also hereditary. Each city-state, (for Sumer was essentially a region of autonomous cities, loosely held together by bonds of culture and religion,) had its high-priest, who strangely enough, had considerable political power, and was, in fact, king. He is called in the tablets "Patesi",** which may represent Sanskrit "Pradēshtri" or viceroy. He was also called "Ishakku" or "Ishanaq," which is the same as Sanskrit "Īśānaka," i.e. Master or Lord. It might be mentioned that each city had its local god (or Nagara Dēvatā), but this god was subordinate to the national god, as was the case in ancient India. The high-priest was the Purōhita in the public sacrifices and was an adept in charms and incantations, like the Atharvan-priests of India. It is significant that Nedhistim took refuge with the Āngīrasas who, in our legends, are the mentors of that portion of the Atharva Veda which specialises in spells, charms and black magic, of all sorts.

Sumeria and Babylon had also their counterpart of the system of Dēva-dāsis. Every city temple had dedicated to it a number of maidens, ostensibly vestal-virgins but, in reality, living in secret prostitution.*** There was, further, a repulsive rite, especially

* Sanskrit : Udupathi = Moon.

** Pradeshtri is one of the 18 most important officers of State, mentioned both in the Ramayana and the Mahabharata (II 100(36) and II 5(38). The commentators describe a Pradeshtri as a combined executive and judicial chief.

*** Says Herodotus, "Almost all Babylonians and Hebrews go un-washed, into the temple and lie with women. The men are like animals. The Egyptians and the Greeks do not commit such iniquities in the temples."

prevalent in Babylonia, (and carried later into Asia Minor, as I shall narrate,) which required all maidens seeking husbands, to go to the temple and offer themselves to the first stranger they met : or they should pay to the god, as a forfeit, all the hair on their head ! This evil practice, which was abominated by the true Aryan community in India, has, however, its faint echoes in modern times in the practice, prevalent in some back-ward areas of our country, of women in distress, dedicating all their hair to particular deities. Mention must be made here of another revolting custom, which is strongly suggestive of the degenerate character of the Aryan intruders into the Valley of the Twin Rivers and their deviation from pure Vedic faith. This is the horrible ritual of offering to the city gods, (e.g. Baal and Moloch-Sanskrit Vala and Mallaka,) live babies, (usually first-borns) as a burnt offering : for this purpose, fires were perpetually kept burning below the extended arms of the statues of the gods and the children were placed on these arms and allowed to roll into the fire. It is recorded, that on occasions of national crisis, scores of infants from good families were thus immolated by the Babylonians, and their cultural successors, the Phoenicians and the Hebrews, with the utmost co-operation and willingness from the parents. This horrid custom is not without its modern parallel ; certain Tantric rites, prevalent sometime ago in India and South East Asia, called upon mothers to sacrifice their first born infants if they wanted to ensure the happiness of their subsequent families.*

The development of astronomy in Chaldea is attributed, by some knowledgeable historians, to the transport of this science from India. It may be recalled, that this science had very ancient roots in our country and was, in fact, termed one of the limbs of the Vedas (Vēdāṅga). Like our twelve Ādityas, the Chaldeans had

* As an instance of striking parallelism between ancient India and Sumer, Sri Nilakanta Sastri cites the worship of the mother goddess, as the "Lady of the Mountain" in Sumeria, the Indian counterpart being Hemavati or Parvati. In Sumer, curiously enough, the 'Lady of the Mountain,' was ceremoniously 'married' to the Moon-God ; (it may be recalled that Siva wears the Crescent Moon on his fore-head). Sri Sastri thinks that the resemblance is so close that it cannot be accidental.

twelve Suns, to each of which they attributed a month, and one sign of the Zodiac. Says Diadorus, "Through those twelve signs, the Sun, the Moon and the five planets run their course, the Sun, in a year's time, and the Moon, once a month. To the planets, they (the Chaldeans) assign their own proper courses according as their motions are quicker or slower. These stars, they say, have a great influence, both as to the good and the bad, in men's nativities". This shows that, as in India, astronomy walked hand in hand with astrology, in Sumeria. The Babylonian year was, like the early Indian, on the lunar basis, but to make the year coincide with the course of the Sun, an extra month was intercalated in the very manner as is described in the Rig Veda (I.25). I admit, that there is some controversy, as to whether Indian astronomy owes its learning to Chaldea or vice versa, but this is not the place to go into the merits of this dispute. I need only say that the age of the Rig Veda is at least 2000 years older than that of the Chaldean civilization, and the Vedic rishis, who sang of star-lore, could, naturally, have had no idea of the Babylonian scientific speculations !*

I have already emphasised, that the Indo-Aryans, who overran southern Mesopotamia about 3000 B.C., were mostly 'Panis,' who had a somewhat unsavoury reputation at home, for aggressive, if dubious, commercial practices. In their new habitat in Sumer and Chaldea also, they seem to have concentrated on trade and commerce, as is evidenced by the bulk of their written records, which relate solely to business transactions, monetary accounts, contracts of sale or purchase, and such like. To emphasise the point that these people were intensely addicted to

* The following quotation from Colebroke's 'Miscellaneous Essays' P. 402, will be of interest to the reader: "The adoration of the Sun, the planets and of the stars, in common with the worship of the elements, held a principal place in their (Hindu's) religious observances enjoined by the Vedas and they were led, consequently by piety, to watch the heavenly bodies. They were particularly conversant with the most splendid of the heavenly planets; the period of the Jupiter being introduced by them, along with those of the Sun and the Moon into the regulation of their calendar, sacred and civil, in the form of the celebrated sixty years, common to them and the Chaldeans and still retained by them (Hindus). From that cycle, they advanced, by progressive stages, as the Chaldeans did, to larger periods."

commerce, I may mention that the Chaldeans had, among them, a community of specialists in trade, called *Saits*, who, in the words of a historian,* "were certainly not descended from a race inter-mixed with Semitic blood," i.e., came of pure imported stock. These *Saits* should be, perhaps, equated with the "Shrēstins," (the later Seths and Shetties,) who are mentioned, as a mercantile and artistic class in Sanskrit literature. The Chaldean *Saits* were great patrons of art. To quote the same historian, "Not till under the *Saits*, did art rise again to a height, which recalled the palmy days of the ancient realm (i.e. Sumeria). This early Chaldean art was the mother of that of (Semitic) Babylonians and Assyrians who proved themselves diligent students and gifted imitators, but never more than students and imitators and never produced anything original. The Semitic race was, no doubt, highly talented, but in architecture and sculpture, it never produced anything great in itself.....and the further it went from the ancient centres (of foreign influence), the more unskilful it became".

A word about the Sumerian (and Chaldean) cities. Their prominent land mark was the temple tower, called Ziggurat, (this is a corruption of Sanskrit "Sikara," even as "tell" or mound is the debased form of "Sthala,") of mud-brick reinforced with stones, surrounded by a temple with white-washed walls, with many dark and narrow chambers, one of which housed the statue of the City-God, cast in gold, silver, or bronze. This statue was never touched, or even seen closely, except by the high-priest and his followers. The temples owned much landed property and a tithe of the produce of the land, went to the temple, to sustain the small army of temple ministrants. Near-by was the palace of the king, who was also the judge and the chief priest. Around the temple and the palace dwelt the common citizens, in narrow and dusty streets, which carried all the commercial traffic, in head loads, pack-mules, asses, or in wheeled carts drawn by oxen.** The rich rode on

* Will Durant, "Story of Civilisation" Ch. VIII.

** "The chariots and wagons (of the Early Dynastic period of Sumerian civilisation) were evidently mounted on solid wheels, made from 3 pieces of wood held together by cross pieces, drawn by Asiatic asses (onagers), or oxen harnessed by collars." (Grahame Clark "World Pre-History," P. 95).

horse-back, or chariots drawn by asses or onagers; the poor were content with bullock wagons, or trudged on foot. Everywhere, there was a bustle of industry and domestic activity and the people showed no sign of want. The nobles could, of course, dress themselves (and their women-folk) in fine clothes and jewellery, all be-speaking high artistic excellence. Some instruments of civilisation, which were conspicuously absent in Egypt, like animal-drawn vehicles, the potter's wheel, ox-drawn ploughs, and castings in copper and bronze, were in abundance in Sumeria. This picture would just fit in with that of any ancient Indian city, (circa 2000 B. C.,) as described in our Purāṇas; Ayōdhyā, Mithilā, Hastināpuri and Kāśi, must have been very similar to Nippur, Uruk, Larsa and Babylon, if we make due allowance for the babel of tongues usually met with in Sumeria, in contrast to the chaste Sanskrit, or the colloquial Prakrit, uniformly spoken throughout Nāgarika India.

For the sake of comparison, here is Vālmiki's description of Ayōdhyā. "Ayōdhyā was 48 miles in circuit. It was filled with merchants, beautified by gardens, ornamented with stately gateways, crowded with chariots, elephants and horses, and with ambassadors from foreign lands. Embellished with palaces, with high domes like mountain-tops, and dwellings of great height, resounding with the beautiful music of the tabor, harp and the flute; surrounded by an impassable moat, guarded by archers. There were no atheists and men loved their wives; the women were chaste and obedient, endowed with beauty, wit, sweetness and industry, wearing costly ornaments and bright apparel. The city was governed by eight councillors, (two of them priests, learned in the law and the rest, from the common folk) impartially awarding punishment, even to their sons and never oppressing even an enemy".*

The names of the old Mesopotamian cities seem to have a familiar Indian ring. Nippur was, of course, Naya Pura or new town. Urartu or Uraṛtha was the city of the God of Wealth

* It may be mentioned that Rajagriha, in the 6th Century B.C., had a perimeter of 25 miles, as revealed in the excavations. Megasthenes gives Pataliputra, an area of 15 square miles.

(Artha = Kubēra). Uruk is probably derived from Sanskrit Uru meaning, "great and excellent". As regards Babylon, it is interesting to note, that it was known to the Vedic Indians, as Brbyru,* which may mean the city of Brbu, as Dr. Weber thinks. (I had mentioned earlier, that one of the great leaders of the Panis, was known as Brbu ; he was a merchant-prince, and unlike other Panis, he was a generous giver, or a 'sahasra-dātama'.) The town of Kish or Kishur was, probably, named after the Sun (Sanskrit Kiṣōra = Sun).

Archeological finds, both at Babylon and in the Indus Valley, have established a close connection between Sumeria and Sapta-Sindhu, as early as 3000 or 2500 B.C. In various Mesopotamian sites, there have been found the square stamp seals, characteristic of Harappa, bearing the Indus Valley designs and connected inscriptions. Games-men with the head of a ram, or of an ox, (probably used in a sort of chess play,) have been found both at Lothal and in Uruk. These have been unearthed in the Near East excavations, in strata which can definitely be dated back to at least 2500 B.C. While the later artifacts seem to relate to 1500 B. C., the seals indicate that there was not only active trade between the two areas but also considerable settlements of Indus Valley people in the Near East. Sir Leonard Woolley thinks that there should have been colonies of Indian trade-agents settled at Uruk, (where the seals are most common), Nippur, Babylon etc. That there should be overseas agents, at such a distance from the Indus Valley bespeaks, in Woolley's opinion, a flourishing mercantile aristocracy in India with considerable sea-going facilities and with large foreign interests. I, however, venture to suggest that the crop of Indus Valley seals, and characteristic Harappan pottery found in the Sumerian cities, is only confirmatory evidence of the fact that the ruling personalities in these cities, as well as the upper strata of the citizens, had actually moved from Sapta Sindhu and established themselves in the Fertile Crescent, building cities there and imposing their culture,

* Sumeria was called Berberika by ancient Indians. There was a colony of Sumerians at the mouth of the Indus, known by this name. The West-coast of India was divided into seven zones in ancient times ; one of these, near the Indus region, was called 'Berbera.'

language, and religion on the primitive local population. E.B. Havell even sees, in Sumerian sculpture typical Indian motifs. In the famous stele of Naram-Sin (2300 B.C.), he thinks, that there is a reproduction of an Indian temple *sikhara*, with the sign of Vishnu, viz. the blue-lotus flower over it, in the shape of a noon-day Sun, (a disc with a number of spokes).

Support for the foregoing surmise, is found in the report recently published by a Danish expedition, which, in 1961, carried out some remarkable explorations in the Kuwait island of Failaka. The expedition uncovered there a staging point, wharves, houses, store-yards, etc. Among the ruins of these were found numerous steatite seals, of the same type as found in Mohenjo-Daro and in Uruk, in Mesopotamia. The report explicitly asserts that the race of civilised immigrants, who came into Sumeria about 3000 B.C., hailed from the east of the Persian Gulf. The Danish archaeologists hold that the incidence of the seals makes it almost certain that these intruders were none other than the Indus-Valley people, whose adventurous trading communities had emigrated to other lands, to "capture markets" and to settle their surplus population elsewhere, on the model followed by the Phoenicians, round the Mediterranean, in historical times.

It may, incidentally, be pointed out that the so-called Indus Valley civilisation is now found to be a geographical misnomer. During the last ten years, extensions of the Harappa culture have been located in East Punjab and Uttar Pradesh (near Delhi) : in north Rajaputana near Bikaner, and most significantly, in Kutch and Saurashtra and in Central Gujarat down as far as Surat. The Harappa culture, which had been confined, by Western savants, to an area roughly 1000 miles by 500 miles, around the course of the Indus (and to some extent, in Baluchistan), has now been found to spread out by a few hundred miles more to the east and the south in Āryāvarta. Is it not permissible to imagine that the same people, (loosely called Harappans,) might also have dispersed themselves by sea, a few hundred miles to the *west* of the Indus delta, especially since they had excellent navigational facilities on the Indus and in Saurashtra and Gujarat, (Lothal, Baru Kaccha, etc.,)? It is very likely that when the so-called Indus-Valley script

is deciphered, it will bear out the truth of the assumption, indicated by me. It will also support the theory, which I have thrown out in these writings, that the Vedic Aryans in Sapta Sindhu largely used the western sea-board of India in their penetrations into the Deccan and further south, in pre-historic times.* The researches of Dr. Godbole, who was Development Commissioner in Rajaputana recently, have proved that the salt found in the Rajaputana desert is *sea salt* and that part of Rajaputana was a large sea, till about 2500 B.C. This would naturally preclude the Harappans from making an over-land journey into the Deccan, especially seeing to the difficulties posed by the Vindhya mountains. I should, however, mention also at this stage, the converse theory (so dear to the heart of learned Father Heras) that the "Harappan" culture started, in the very dim past (about 5000 B. C.,) from the Cauvery basin and advanced along the Western coast to Kathiawar, Sind and the Punjab, and then went over to the Near East and the Mediterranean, under the sponsorship of the redoubtable Tamils !

I should like to end this chapter with an interesting piece of evidence, which seems to lend credence to my theory. In the inscriptions of the Akkadian kings of Babylon, Mr. Leeman has found two words, *Makkan* and *Meluhha*, repeated in connection with the import of carnelian and of special woods into Babylon. Mr. Leeman has identified 'Makkan' with the Makran coast of Baluchistan. (Makran is really Makara, which in Sanskrit means crocodile.** It is well-known that this area was, and is to some extent, infested with crocodiles.) In 'Meluhha', Mr. Leeman would find a reference to the western coast of India, covering Sind Kathiawar and north Gujarat. (In ancient times, western India

* Dr. Michael Ridley, a British archaeologist, thinks on the basis of a button seal found recently in the Burdwan District of West Bengal that there was trade between Eastern India and Crete before 1500 B.C. The seal contains certain scripts which resemble closely those found on the Mediterranean island, on artifacts dated between the Pictograph and Linear script periods. According to Dr. Ridley, there is literary evidence of a brisk trade between Crete and India 3500 years ago, in ivory, spices, pulses and pottery.

** The mount of Varuna, in Aryan myths. The crocodile was a favourite religious symbol in the Indus Valley.

was known as 'Uhana'). If this identification be correct, then it would strengthen the view that there was intimate contact between the Fertile Crescent and the areas where the so-called Harappan culture flourished, for about 2000 years. I suggest that this close association in business was not due to mere exigencies of trade, but to the fact, that the people at either end of this commerce belonged to the same race, viz., our Aryan forefathers, who were intrepid sea-farers and keen exploiters of overseas commercial facilities. (Vide Note on "Ancient Mariners" to Chapter IV)

NOTE I TO CHAPTER III

DR. WADDELL ON THE SUMERIANS

In trying to refute the suggestion of the Assyriologists of the old school, (who were wedded to the dogma that the Sumerian language was *sui generis* and had no relationship with any other Aryan language), Dr. Waddell has propounded the interesting theory (vide his "Sumer-Aryan Dictionary"), that the Sumerians were "early Aryans" and that their language and their physical type fully bore this out. In his opinion, Sumerian was the parent language of the Aryan family, including that of ancient Egypt, and "this Aryan speech, with its writing, was spread throughout the ancient world by the Phoenicians, who were not Semites, as hitherto supposed, but the leading sea-faring branch of the Sumerians or the early Aryans". In Dr. Waddell's opinion, Sumerian was radically Aryan in its words, structure and script. "The whole family of Aryan languages, with their written letters, is derived from the Phoenicians' language and script and that about 50% of the commonest words in the English language today, is discovered to be Sumerian in origin, with the same word-form, sound and meaning". He has adduced considerable evidence of the Sumero-Phoenician origin of the ancient Egyptian civilisation and language. He has also identified Menes (or Aha) of the Egyptians with the Sumerian Emperor Manis-Tusu, the son of Sargon of Akkad. According to him, the word *Ārya* ("noble and exalted"), used by the Indians of old, should be equated with the *Ara*, *Ari* or *Harri* of the Sumerians, the Akkads and the Hittites, which words conveyed identical meaning. Similarly, the name '*Aeria*' or '*Hariea*', given by the Greeks to ancient Egypt, should be taken as implying that Egypt was the 'land of the Aryans'. Further, in the Sumerian language *Ara* meant a plough and the word was also used to convey the sense of 'exalted and noble'. In this fashion, the Aryans, who were the traditional inventors of the plough, probably got the name '*Ārya*', in token of their great contribution to agriculture, says Dr. Waddell.

As regards the location of the original source of the Aryan group of languages in Europe, (particularly by the Germanic school), Dr. Waddell is convinced that this theory is thoroughly unsound. "The claim that the Teutonic language is the oldest and purest Aryan language in Europe is totally unfounded".

The following is a summary of the views expressed by Dr. Waddell in his book cited above :

The name 'Sumer' was never used by the Sumerians themselves, but was given currency by the later Babylonians and Assyrians. The decipherment of the Sumerian script is one of the greatest archaeological romances of the 19th century and Rawlinson was the pioneer in this respect. From the decipherment of the bilingual cuneiform texts, he came to the rare conclusion that Sumer, the non-Semitic early language of Mesopotamia, was spoken by the ancient civilised people of this land, who had subsequently passed on to the Semitic Babylonians and Assyrians their civilisation, religion and script (i. e. linear writing). Dr. Oppert called these early people, Sumerians, and he showed that many of the tablets in the temple at Nineveh, were mere translations, mostly religious, of the old Sumerian records. This was followed by the massive discovery of an old ruined city at Telloh in Lower Babylonia (the so-called Ur-Nina) which was an Aryan-Phoenician city. (Incidentally, Gudea was an Aryan priest-king, according to Dr. Waddell).

As mentioned *supra*, the Semites had borrowed all their systems of government, their laws and much of their literature from the Sumerians. The Sumerian domestic rituals were also essentially similar to those of the early Aryans, thus establishing intimate connection between the two. The Sumerian pictograph writing is an ingenious attempt to portray the speech of a highly cultured community and it conformed to the Aryan system of writing, *from left to right* (corresponding to the movement of the Sun in a pradakshina way) "in contra distinction", says Dr. Waddell "to the retrograde or reversed Semitic direction in the path of the Moon - a distinction based presumably upon the Sun-worship of the Aryans, as opposed to the inveterate Moon-worship

of darkness and demons, requiring bloody sacrifices, characteristic of the Semites ”*

Besides the word-sounds and meanings represented by pictorial signs, the Sumerians adapted these pictographs to a fuller expression of speech and to signify abstract ideas. In this usage, the pictograph became an ‘ideogram’ or ideograph. A still further stage was the use of these ideographs, merely in token of their sound without any ideographic sense whatsoever, especially where the words were of more than one syllable. This usage was called a “syllabary”, which was however different from the true alphabet, which was not achieved even by the Babylonians who succeeded the Sumerians, and “was a contribution of the Phoenicians”. The syllabary could be compounded in Sumerian usage, by strokes or other signs; this process was known in Sumerian as ‘Gun’ (i.e., collection or joining), which expression, strangely enough, corresponds to the Sanskrit ‘Guna’, implying the same meaning (multiplier, coefficient). Below are given a list of Sumerian words selected at random, which, in Dr. Waddell’s opinion, correspond to similar words in Sanskrit :

<i>Sumerian</i>	<i>Sanskrit</i>	<i>English</i>
A	Aham	I
Ah	Ahre	Invoke, call
Ā	Ha	Water
Abba	Bāp Pāpa	Father Protector
Āp	Āpa	Water : sea
Ad	Ahi	Snake
Ag	Aj	to move to work

* c/f. *Satapata Brahmana* (I.5.3,(18)) “The Sun that gives us heat and light is Indra and the Moon is Vrittra; the Sun is like the Moon’s eternal enemy”.

<i>Sumerian</i>	<i>Sanskrit</i>	<i>English</i>
Āg	Agni	flame ; fire
Aga	Agra	crown ; top
Agar	Ajra	a field
Ega	Ōgha	flood
Ap	Ap	to work
Apa	Apa Aparā	behind back
Abni	Agni	fire ; place of fire
Abru	Apsu	ocean ; water
Adda	Ādi Adya	father ; head
Aste	Āsa	seat
Aum	Aum	Mystic title or syllable.
Ayag	Ayas	bright metal
Ayu	Ōja	medicine- -man
Bi	Bis	to cut ; divide
Babe	Bhav/Bhū	to be
Aar	Ark	to shine
Aka	Agha	pain ; cry
Aka	Aja	omen
Akh	Aksha	eagle
Am	Ama ; Oma	friendship

<i>Sumerian</i>	<i>Sanskrit</i>	<i>English</i>
Ama	Ambā	mother
Andara } AnDur }	Indra	Lord ; Chief
Anu	Ama	corn
Ara	Ara	plough
Ara	Itā/Irā	earth
Ara	Ārya	exalted ; noble
Hari } Ari }	Ārya	"
Ar } Ara }	Ar Hari	to hurt ; to injure ; destroyer
Ara	Ara	To go swiftly
Ara	Ahar	time ; day
Aratta	Aradhas	hard ; heavy
Arazu	Arzi	prayer
Ari	Ari	enemy
As	As	complete; all per- vative
Assa	Īsa	Lord ; God
Asar	Asura	mighty ; lordly
Assa	Asva ; Āsu	horse
Bad	Bādh	to strike
Bad	Bad	bad or wicked
"	Bid	to open
	Budhna	deep

<i>Sumerian.</i>	<i>Sanskrit</i>	<i>English</i>
Pad	Pitu	food ; bread
Bak	Pajika	a falcon
Bakus	Bhaga	the ' Dispenser '
Bal	Val	to turn round
Bal/Bul	Bhal	to hurt
Ban	Vamsa	son or daughter
Ban	Bāna	arrow
Bānda	Bhānda	a vessel
Bar	Vara	barrier ; fence
Bara	Vara	House ; room
Bara	Pura	city
Bara	Vira	strong ; brave
,,	Badha	great, big
Para	Pāra	far away, high
Ba	Ba	Sky
Bar	Bhrātr	brother
Baramā	Brahmā	priest
Barta	Bharata	founder of line of kings
Barti	Bhārati	lady ; princess
Pi	Pib or Pā	to drink
Bid, Bad	Vid	to see ; to know
Bir	Barana	child
Pish	Visara	fish
Piriq	Vrika	a wild beast (a wolf)
Pir	Barhis	splendour

<i>Sumerian</i>	<i>Sanskrit</i>	<i>English</i>
Ekhi	Ech	to go out ; hasten
Eizi	Ushas	Dawn
Esha	„	Dawn-goddess (Lady of the Waters)
Laxamu	Lakshmi	Goddess of prosperity
Erin	Haridru	cedar tree ; (dēvadāru,)
Aru	Hūri	woman slave (girl of paradise,)
Eri	Ara	go swiftly
Ini	Indra	Lord ; High One
Eme	Om	Sacred syllable (speech)
Ela	Ahi	deep water ; ditch
Dur	Drōna	sacred vessel
Durn	Dhārā	shining and flowing water
Dukas	Taksha	{ Creator- -God
Dug	Dis	teach, „ speak, command
Dug	Dis	meditate
Dub	Dya	go against
Dugh	Dugshi	a pot
Tup	Twupa	heap up ; a conical pile
Du	Dhu	to go
Dua-uru	Durvasu	{ the name of a nation

<i>Sumerian</i>	<i>Sanskrit</i>	<i>English</i>
Dirig	Dhuru	to bend
Dimmu	Dharma	law, order, command
Dimma	Tamasa	dim, dark stupid
Dim	Tam Dam	to choke, to conquer
Dim	Dhāma	House
Dim	Daman	bind, tie up
Dikh	Likh	to write
Di/Die	Di	to perish
De	Da(h)	to burn
El	Ela	merriment
Edin	Edin/Irin	desert ; plain
Duttu	Dūta	speaker, messenger
Duran	Dūr	Deity of life ; Lord Vala or Bel
Dura	Dhur	draw, yoke ; drive
Duru	Dhrwa	fortress, mountain
Dur	Dōraka	rope
Buz/Piz	Vish	poison
Puru	Puru	Lord Purv or Purūravas
Pur	Prōhi	a well
Bur	Barbura	mass of water

<i>Sumerian</i>	<i>Sanskrit</i>	<i>English</i>
Dakha } Dasia }	Daksha	Lord of Feast
Dax	Dax	to combine, ; to add
Das	Dāsa	servant, slave
Dardaniu	Darada	The name of a people (Trojans) ?
Dāra	Andhēra	Darkness
Dara	Dāru	Lord ; a title of Indra
„	Drapī	woven cloth in colours
Bir	Bhid	break
Bel } Bil }	Bali	God of light ; surname of Indra
Pur	Pura	a stone bowl
Khatti	Kshatri	Ruler ; Ruling class

NOTE II TO CHAPTER III

VISHNU IN MESOPOTAMIA

In a paper, submitted to the All-India Oriental Conference in 1964, Sri B. K. Chattopadhyaya makes the following points:—

(1) Apropos of the Indus-Valley seals (dated circa 2500 B.C.), found at Ur and Kish in Mesopotamia, there is mention of a place called Uru-Kshiti, in Rig Veda, VII, 100(4), as below :

“Vishnu traversed the world, in order to give lands to his worshippers ! Those, who worshipped him, got a fixed abode. He created Uru-Kshiti”.—In the author’s view, this verse indicates that the Aryans were going abroad from India, in quest of new lands under the leadership of Vishnu.*—Again, in Rig Veda, X. 84(1), is another verse reading thus :

“Oh Sōma, flow for Indra, Varuna and Vāyu; Let gods assemble at Uru-Kshiti, hearing the recitation of your mantras !” Further, in Rig Veda, X, 118(8) and (9), occur these significant passages :—“Oh Agni, blaze in the houses of Uru and destroy the Rākshasas” ; “The dwellers of Uru kindled you (Agni) with hymns” ; Finally, in Rig Veda, VIII, 68 (12 & 13), the word Uru occurs in a context which suggests that it is the name of a place and not the equivalent of “great” or “much”, as interpreted by Sāyana, the Indian scholiast.

Dr. Marshall believed that the Indus seals were carried to Ur and Kish by people hailing from India and settling in Mesopotamia. Even Piggot, in his “Pre-historic India”, conceded that there were obviously Indian inhabitants in the Mittani kingdom of 1500 B. C. ** Sri B. K. Chattopadhyaya thinks that

* Who is elsewhere called Sthavira, or coloniser, and whose three steps are sometimes construed as an allegorical representation of his establishing three distant Aryan colonies, outside Sapta Sindhu.

** I have referred, elsewhere, to similar views of Sir L. Woolley and of Hrozny.

the Chaldean city names, Ur and Kish, are merely corruptions of Uru-Khsiti, mentioned in the Rig Veda and that the Sanskrit name tallies with that of Urkashdem, (mentioned by Maspero in his "Struggle of Nations", as the name of a Babylonian City).

The learned writer argues further that, from the following considerations, the date of 1500 B. C. for the Rig Veda cannot be correct. Winternitz had observed long ago that it had been conclusively proved by Buhler, that the Vedas could never have been composed so late as 1500 B. C. Dr. Winternitz, citing the astronomical evidence of Tilak and Jacobi, suggested that the Veda should be dated at least 4000 B. C. (Tilak dates certain verses of the Rig Veda at 4000 B. C. and Jacobi at 4500 B. C.).* In the words of Sri Chattopadhyaya, "No mistakes have been pointed out in these calculations and these calculations have been accepted by Buhler, Barth, Winternitz and Bloomfield. Prof. Sen-Gupta, in his "Ancient Indian chronology", fixes the date of the Rig Veda at 4000 B. C. 'at the latest' and his calculations were accepted by the Astronomer-Royal".

Mr. Chattopadhyaya holds that the first invasion of Mesopotamia by the Aryans took place in 3500 B. C., as suggested by Hrozný and he feels that it is reasonable to hold that the Aryan invasion took place direct from India, and not from the "Caspian Sea area". Assuming the date of the alleged destruction of the Indus-Valley culture as 1500 B. C., it is obvious that the agents of this destruction could not have been Aryans, who were in India in 4000 B. C., in this very Indus Valley area.

As regards Marshall's opinion that Siva and Sakti were worshipped at Mohenjo Daro and these were 'adopted' by the Aryans later, it is pointed out by Mr. Chattopadhyaya, that the Vedic expression "sisna dēvāh" does not mean phallic worship but "worship of sexual pleasures", as explained by Yāska and Sāyana.** Further, Rudra is identical with Siva, as described in

* Dr. Radha Kumud Mookerji cites, with approval, the opinion of Dr. Winternitz (vide "Glimpses of Ancient India, PP-20, 21).

** In Rig Veda, VII, (21), Vasishtha prays to Indra, "May the Sisinadevas not overwhelm our Rta". The context supports Sayana's view.

the Yajur Veda, which is older than the Indus-Valley culture. Similarly, Durgā is referred to in the Vedas, vide the Khila portion of the Rig Veda. The Vedas generally refer to non-Aryans with some dis-approval, if not with contempt, and it is not likely that the gods of these non-conformists would have been adopted by the Aryans so early in their religious efflorescence. * In the Purānas, Siva is depicted as the enemy of the dasyus, mlēchchas etc. and Durgā is said to have fought the Asuras, on the side of the Dēvas. "The religion of Mohenjo Daro must have been Vedic" concludes Sri B. K. Chattopadhyaya.

Regarding the plea of Dr. Marshall that no iron armour was found at Mohenjo Daro, as also the horse, although these are mentioned in the Vedas, Sri Chattopadhyaya argues that silver vessels are not mentioned in the Rig Veda but they have been found at Mohenjo Daro. Further, in an Indus-Valley copper plate of Marshall, (plate XXVII), a man appears clad in armour which may be of iron. "Piggot thought that traces of the horse had been found at Mohenjo Daro, an opinion, now apparently confirmed by other evidence - ". [Bones of the horse have been found at Lothal]

* This alien and inimical god of the hated Dasyus, could not have been called by the Aryans by such names as Mahadeva, Devasimha, Sailendra etc., and elevated to the first rank in the Trinity.

CHAPTER IV

THE PHOENICIANS AND THE PERSIANS

In the previous chapter, I had often referred to the Phoenicians, and had indicated that they were of Aryan stock and had formed part of an enterprising Aryan community which had originally settled in the land of the Twin Rivers, about 3000 B.C. In the following paragraphs, I shall elaborate the point which I had made, adducing some additional evidence, which I hope, will lend convincing support to my theory.

According to their own tradition, the Phoenicians came to the Mediterranean area from the Persian Gulf. The whole of historical Phoenicia consisted of a narrow coastal strip, a hundred miles long and a few miles wide, between Syria and the Sea. This nation never thought it worthwhile to go inland into the Lebanon hills and bring them under their rule: they were content to use these magnificent hills as a rear buffer against the warlike nations of the interior, whose goods they carried, all over the high seas. The Punics practically lived on the water; from 2500 B. C., they were the busiest merchants and carriers of the ancient world. For nearly fourteen centuries, they remained under the political hegemony of Egypt; from 1200 B.C. onwards, they became free, and for the next few hundred years, remained the masters of the Mediterranean. They travelled mostly by water, and showed themselves an essentially sea-faring people, but familiar with city life, presumably having tasted its attractions in Sumeria. They filled their new territories with coastal towns, strongly fortified on the landward side; these maritime strongholds, (which were obviously intended to check-mate an unfriendly local population), were often knit-up in a loose federation, based on common religion and economic interest, but each city having its own king (and its own God). However, the governments in Phoenicia were not theocratic, in the sense they were in Sumeria. The Phoenicians of history never aggrandised themselves by warfare; they were essentially merchants, craftsmen, and, above all, carriers. (Woolley appropriately terms them "the

middle men"). They traded in hardwood and dyestuffs, and in fine articles made of gold, silver and ivory. They manufactured embroidered cloth, and sold valuable gums and incense. Their livelihood depended on the sea, and when the parent cities got over-populated, they sent out colonies abroad all over the Mediterranean and even rounded the African and the Atlantic coasts. They believed in diplomacy, rather than in open warfare. As Woolley observes, they show us "a phenomenon rare in ancient history, of a rich and energetic people, who insisted on liberty, quarrelled little among themselves and indulged in no wars of aggression.....though they might occasionally conduct slave-raids on defenceless coastal peoples". They were peddlers, or pirates, according to needs and circumstance !

Will Durant frankly confesses that he is unable to trace the genesis of this race, which was so ubiquitous and at the same time so elusive*. He says there is no evidence to contradict the statement, which the scholars of Tyre made to the Father of History (Herodotus, circa 480 B.C.) that *their* ancestors had come from the coast of the Erythrean Sea via Persian Gulf and had founded the city of Tyre about 2000 years earlier (i.e., about 2500 B.C.).** As I have pointed out, their very name is problematical to Western historians, as the etymology of the name of "Phonix" of Herodotus, is not readily available to them. It has been suggested that this appellation, as well as the Latin Punic, bears close relation to Sanskrit "Pani" or "Panik" and that these people are none other than an off-shoot of the Aryan people, who had founded so many city-states in Sumer and Chaldea.

As I have said, they were not only carriers ; they were also manufacturers of various objects in glass and metal, and made enamelled vases, weapons and jewellery of gold and silver. They specialised in the dye-trade, and the Tyrean purple which they vended to many nations, was quite famous in the ancient world. Pānini, (whom Max Muller calls 'the greatest grammarian

* "The Story of Civilisation", Ch. XI, P. 291 ff.

* The Arabian Sea was called the Erythrean Sea by the ancients ; c/f. 'The Periplus of the Erythrean Sea.'

of all time') has some interesting things to say about the export trade from India, which was presumably carried in Phoenician bottoms. The grammarian refers to the traffic in resins and incense (guggulu and naladha) from the upper reaches of the Indus to the Egypt of the Pharaohs; another important article of export was a species of unguent (anjana) which was so profusely produced in the Sulaiman mountains of Afghanistan, that the whole range was called "Anjana". Pānini also mentions prominently, dye-stuffs like munjista and nili (madder and indigo). Indian madder (Rufia Munjista) is mentioned in the Brāhmanas of about 2500 B.C. and the permanent dye (of a bright purple) made from its flowers, was highly prized in the ancient world.* (Even to-day, the dye is made and sold by the Lohana Afghans in North-West India and adjoining areas). Nili is, of course, the indigo plant whose culture, according to McCrindle, had been practised in India from very remote times. The fast indigo-blue dye extracted from the plant commanded a wide repute all over the civilised lands, till very recent times.** The fact that the Phoenicians had a phenomenal reputation as dealers in dyes which were the products of north-west India, would lend support to the view that these Punic traders must have originally hailed from this part of the country and been familiar with the manufacture of those dyes. It is of significance that Pānini was well-acquainted with the trans-oceanic commerce of which he speaks; he mentions ocean-going boats and says that the worth of merchants was assessed in terms of the number of ship-loads of merchandise they handled. According to him, there were merchant princes sailing with as many as five ship-loads at a time, called panchanāva-priya.†

Ancient writers mention that the women of Tyre and Sidon were famous for their deft needle work and the gorgeous colours they wove into their fabrics. The Phoenicians exported these, as

* The dye was so fast that, in Skt. literature it, was used in a simile i.e. "friendship as lasting as munjista dye"

** Chemical and Synthetic dyes have now over-shadowed nili.

† Please see Note to this Chapter.

well as the cereals, oil, wines* and precious stones from India to ports in the Mediterranean, far and near, bringing back lead, gold, copper from Cyprus, ** ivory from Africa, silver from Spain, tin from Britain, and slaves from everywhere. They were so shrewd that it is said that, on one occasion, they bartered their ship-load of oil for so much Spanish silver that the ship could not hold all this metal, with the result that the Punics cast away their iron anchors and replaced them with silver ones ! Their business methods were allegedly not always on a high moral plane. In the rather harsh judgement of Durant, "they stole from the weak, cheated the stupid, and were honest with the rest." *** (These phrases are reminiscent of the tactics and scruples of the European merchant-adventurers who carried the white man's burden into India and the Far East, in the 17th and 18th Centuries !)

Perhaps the Phoenicians did not wholly deserve their dubious reputation ; they were probably no worse in business morality than the Greeks,† (who have denigrated them in history), though far ahead of them in maritime enterprise. Their low, narrow, and frail galleys, about 70 feet long, with a pointed prow, propelled by a single rectangular sail, supplemented by a double bank of galley slaves who provided most of the motive power, often hugged the shores, in the initial stages of their seafaring experience. Slowly, the Punic pilots picked up deep-sea navigation, using a sort of rude compass (consisting of an iron fish floating in oil); and guiding themselves by the North Star (the Dhruva nakshatra), they even succeeded in circum-navigating

* Kapisa in modern Afghanistan was so famous for its draksha wine that 'Kapisya' in antiquity meant grape-wine, in the sense that 'Scotch' means whisky to-day.

** The Island was named after its copper mines ; in Sanskrit, "Cuppyum" means non-ferrous metal, particularly copper.

*** 'The Story of Civilisation', P. 293.

† The early Greeks were addicted to piracy and slave-raiding. In Solon's time, there were clubs organised for committing piracy, in Athens.

Africa, thus anticipating Vasco da Gama by about 2000 years! * Their latter history is well known to the world, thanks to Greek and Latin writers, who were not always fair and impartial in the portrayal of their traditional rivals. They established garrisons and entrepôts all over the Mediterranean and even in distant Britain. They took the arts and crafts of India, Sumer, Babylon and Egypt and spread them in Greece, Italy, Africa and Spain. "They helped", as Durant brilliantly puts it, "to redeem Europe from barbarism".

It is very likely that most of the art of navigation was learnt by the Punics (or Panis) from India, where there were large sea-faring communities on the Arabian Sea coast, as I had already mentioned. This opinion has received some recent support. In Southern Afghanistan, at a site called Kundigak, near Kandahar town, large excavations have recently been carried out, under French auspices. At a level provisionally dated 1600 B.C., were found large store-houses and public buildings of a type associated with Harappa. In a lower level, attributed to about 2500 B.C., a big structure in mud-brick has been unearthed, which has brick pillars and facades closely resembling those found in Sumerian cities. Further south in Baluchistan, a culture (the so-called Kulli) has been located at Mehri, which is typical of that found in Sumer, as well as in the Kathiawar and Gujarat areas. Not only are stone vessels of Mehri pattern fairly common at Urartu and Uruk, but the painted pottery manufactured in the region near Baghdad round about 2800 B.C., reproduced the Kulli designs and motifs, with such accuracy that, in the words of Sir L. Woolley, "one suspects the arrival of Kulli potters in Mesopotamia". This observation of Woolley is pregnant with significance in as much as it concedes the possibility of a migration of peoples, rather than a mere transport of goods. I suggest the people involved in this population movement (from India, to foreign climes) were the Panis or Phoenicians, who were craftsmen of a

* Says Otto Neubert (The Valley of Kings, P. 299), "Distance had no terrors for the Phoenicians. By 700 B.C., they had visited the Azores and West Africa, rounded the Cape of Good Hope and crossed the Indian Ocean." He calls the Phoenicians, "the Hanseatics of antiquity."

high order, besides being transporters to the whole civilised world of the time.

In common with most contemporary Aryan communities, narrow coastal Phoenicia-on-the-Mediterranean had many gods. Each city had its Bel or Baal, (i.e., Bala or Lord), who was conceived as the ancestor of the local kings, even as in the Sūrya and Chandra Vamsas in India. But each Baal had a local name ; e.g. that of Tyre was called Mel Karth (he became the Hercules of the Greeks) ; Ishtar of Byblos (Greek Astarte) was a formidable goddess, with a disreputable circle of girl devotees, who had either to sacrifice their virginity to the first stranger they met within the temple precincts, or to surrender their long tresses at the altar of the goddess. It may be remembered that this custom prevailed in Chaldea also, where the Goddess bore the same name, thus indicating that the Phoenicians came to Syria from the valleys of the Euphrates and the Tigris. In Chaldea, Ishtar loved Tammuz (the god of chaos and regeneration) ; in Byblos, Ishtar (or Astarte) loved Adonis (i.e. Lord), whose death at the tusks of a legendary boar, (perhaps, an echo of the killing of demon Emusa by Vishnu in *His Varāha avatār*) was annually mourned in Byblos and in Cyprus, with wailing and beating of the breast. Finally, there was the terrible Molloch, (Sanskrit : Mallaka or Powerful) who was satisfied only with the offering of live children.* I may mention that, although the Sumerian language was superseded by the Semitic Akkadian about 2000 B.C. in Mesopotamia, it continued to function as the official tongue in the worship of the gods in Sumeria and elsewhere, in the same way that Sanskrit and Latin have survived as the sacerdotal languages *par excellence* in the Hindu and the Christian worlds. In Phoenicia, although each city had a god, the king was *not* the high priest but ruled in his own right. As in Sumeria, the Ahi (or serpent) motif was strong among the divinities. In fact, the Punics called themselves, when they arrived on the Syrian coast, Kink-Ahis (i.e., servants of the Serpent God or Kinkara Ahi). The name got gradually corrupted into Kinnahi and Kinnani in the local dialect and the Semites

* In Carthage (Punic = Karith Sadasta) in 307 B.C., 200 babies were thus sacrificed during a siege of the city.

started calling them Cannani, (the Byblical Cananites). Their symbol of fertility was the bull, appropriately called Risheb, (Sanskrit : Rishaba). The names of their historical personages also have an Indian ring. To cite only two instances, Hannibal the Carthegenian leader*, (admittedly the greatest military genius in history), and his brother Hasdrabal bear Sanskrit names (Sanni-pāla and Sastrapāla). In the art of war, the Punics followed Indian traditions. They carried chariot and cavalry warfare into Egypt (along with the Hyksos aggressors); and they were later phenomenally successful in the use of elephantry. Readers of history will be familiar with the exploits of Hannibal in this novel branch of military tactics. In 212 B.C., he carried a big contingent of fighting elephants from Asia Minor to the South of France via Carthage, and actually transported scores of them *over the Alps* into Italy, striking terror into the hearts of the Romans with these unusual instruments of combat.**

The Phoenicians have left an indelible mark in the history of civilisation by their contribution to the art of writing. The story of the alphabet is a fascinating one. We have seen that the Egyptians knew the art of picture writing, but they never progressed beyond the stage of hieroglyphs till a comparatively modern date when the alphabet had already been invented, thanks largely to the genius of the erstwhile "Panis".

Perhaps, I may digress some-what, at this stage, to outline the growth of written speech. Unspoken thoughts can be transmitted by various methods, by gestures and flag signs, by the roll of the drum, by signal flares and heliograph, by coded sounds (like Morse), by mere whistling as in the Canary Islands, by means of

* At Lake Trasimene, he achieved, in the words of Liddell Hart, "the greatest ambush in military history". At the battle of Cannae he annihilated the Roman army by masterly tactics. "The conception of a weak centre with two powerful attacking wings was traditional in German strategy and found its roots in Von Schlieffen's classic study of Hannibal's victory at Cannae" (Von Mellenthin "Panzer Battles," P. 5).

** Mahouts from India are said to have served under Hannibal, and later on, under the Romans.

knotted ropes and notched sticks, as in ancient Tibet and medieval Peru, by totem-poles as in America and Polynesia, by pictographs, ideograms, syllabaries and finally, by the alphabet. Ancient Red Indians and modern boy-scouts speak in "Pasimology", or the language of gestures, which deaf-mutes also are trained to use, when they cannot spell out the alphabets by hand signs. The "mudras" of Indian and other Eastern dancers are a species of sign-language, readily understood by the initiated.

The written is, of course, born of the spoken word, though a million years might have intervened between the two processes. Scientists are not agreed as to the original language of the human race. Orthodox Indians think that God spoke an Indian tongue; Europeans would perhaps vote for Latin. The great Webster thought that Chaldean was the original tongue. In the 17th Century, a Swedish philologist seriously maintained that God spoke *Swedish* in the Garden of Eden, Adam, *Danish*, and the Serpent, *French*! (Eve would have, of course, said it with flowers as she could not have used either fans or kerchiefs!) Some feel that Sanskrit could fill the bill, as it is the 'purified language of the gods,' and as it is the base of most civilised tongues of the world to-day, barring the Semitic and the Mongolian ones. God, they say, would have liked to command a wide and enduring audience; a great German philologist propounded this theory, in all seriousness, in the 19th Century, calling Sanskrit the mother of all the tongues of the world.*

Scientists are not agreed either, as to how speech first originated. The 'bow-wow' theory holds that man imitated the quadrupeds. The 'pooh-pooh' theory maintains that language was but a series of ejaculations, of surprise, fear, pleasure, pain, etc. The "ding-dong" school avers that there is a mystic correlation between sound and meaning, as Vedic Indians, no doubt, believed. Liebnitz, in the 18th Century, and Trombelli, in the

* When the "moving finger wrote and having writ, moved on," it seems to have addressed Belshazzar (King of Babylon) in Prakrit: "Mene, mene, Tokale, U'p-harshin" [Skt. Mana, mana, tolake, apaharshin]; meaning (you have been) weighed weighed, in the balance (& found) unworthy and joyless."

20th, thought that the Byblical account of the Tower of Babel was, at least figuratively, true, and that all languages had a common origin. Sophisticated moderns persuade themselves that speech had been given to man to hide his thoughts and that language is merely the vehicle of deceit. Animals, they point out, never carry tales, commit prejury, indulge in light political promises, or concoct excuses to their wives for coming home late ! Akbar the Great made a novel, if misguided, attempt to locate natural human speech. He forced 10 infants to live together in close seclusion for several years, without hearing a single human voice, to find out what language they would speak ; to his intense chagrin, they all came out — quite dumb ! (The Vaidas and Hakims of his court should have put him wise, in time).

To come back to the art of writing, I had explained earlier that the oldest records of language are in Sumerian, dated 3000 B.C. The so-called Indus Valley script is almost contemporary, although it is a vast improvement on the Sumerian, as I shall show. The early Sumerian characters are pictographs; they merely denote things, but cannot convey thought, or give direction. Pictorial representation ends and true writing begins when linguistic ideas germinate ; in other words, the pictures become signs, and the signs acquire a phonetic value correlated to human utterance. The gap between each of the stages mentioned is so large, that for some people, it has become impossible to bridge it. The Chinese, for example, have never come on to a true alphabet. They still use numerous ideograms which, in forced combination, make funny reading sometimes. For instance, a woman under a roof means peace, but two women indicate a quarrel, and three women, idle gossip or intrigue ! (Obviously, the author of these signs was a mere male !) The "man" character enters into two hundred combinations and the "tree", into no less than six hundred. I suggest that it is to the credit of the Vedic Indians to have bridged the gap earliest, since, by about 2500 B.C., they had almost evolved an alphabet in the Indus Valley seals, in which over five hundred characters have been traced and more are likely to be found. It is to the credit of the Sumerians also, that they were able to jump some of the gaps ; so much so, that their neighbours borrowed, if not the Sumerian system, at least, the idea

behind it. The result was a number of scripts, differing radically from Sumerian, but highly indebted to it for the basic conception that a written sign might represent, not an object, but a sound; the embryonic syllabary had been born in the Near East.

Many peoples attribute their system of writing to divine origin. The Indians called their original script Brāhmī or God-given (Aksharam Brahma Samhitam) or Dēvanāgarī (civilised and divine). The Egyptians, of course, called their performance "sacred stone writing", given to them by Thoth (Sanskrit: Twashta). The Babylonians attributed their writing to a gift from Nebo,* (Sanskrit; Nabha = Sky) who presided over human destinies. The Mayas traced their script to God Itzamna. The Japanese styled their old alphabet, "divine characters". (Their alphabet, today, is based on Prakrit without the "L" sounds.)

All ancient writing, usually graduated through four grades. Firstly, there is the *pictograph*, which has a symbol denoting a specific object, a fish, a tree, a man, the sun, moon etc. (The pictures got conventionalised in due course and may not always be true to nature). But the number of pictures which could be so drawn is obviously limited and could not keep up with the spoken words. This led to the second stage, viz., that of the *ideograph*, which is a symbol of ideas, actions and instructions, which cannot always be picturised. (Often, the ideogram was a combination of two or more pictographs). The third step is the *syllabary*, where the ideograph represents, not the object, or thought, or idea, but a syllable in terms of articulated human voice. This finally led to the true *alphabet*, where the characters, both vowels and consonants, represent definite (and limited) sonal values.

The Phoenicians, pressed perhaps by their international commercial needs, seem to be the first to have thought of the true alphabet, especially for keeping accounts, but very recently, their historical claim to this distinction has been rendered somewhat doubtful by the discovery of the Indus Valley script (of the 3rd

* The Biblical Noah,

millennium B.C.), which seems to have almost reached the stage of the true alphabet, (probably corresponding to Sanskrit speech) and by the finding, in the Sinai Peninsula, by Flinders Petrie, of an undeciphered script, patently alphabetic in form, of unknown origin, and of the early date of 2500 B.C. However, the Phoenicians perfected the alphabet, which the Greeks adopted and adapted, according to their own account, about 1200 B.C. * The Greek alphabet formed the base for the Etruscan script, which itself was taken over by the Romans. This is the standard Roman script, which has spread the world over to-day. The Phoenician alphabet is also the parent of a number of other scripts in Asia, like the Hebrew and the Arabic, which consist, wholly, of consonants and on which vowel values are grafted by dots and dashes or by vowel points. While the Roman script spread west-ward in Europe and into the New World, the Arabic characters were widely diffused, with the spread of Islam in Africa and Asia.

The question remains to be answered how a comparatively small community like the Punics could have taken the initiative in this art, one of the most momentous in human history. Here again, the Indian culture-ground supplies the answer. We have seen that by 2500 B.C., our ancestors in the Indus Valley had evolved a sort of alphabet, which unfortunately, has not been deciphered yet. Presumably, this alphabet must be related to Sanskrit or Prakrit speech, but in the absence of a bilingual document (like the famous Rosetta stone of Egypt),** we have not been able to read into the characters, their phonetic values. Scholars are however on the job and one can be hopeful that, in the not distant future, the "Harappan" seals will yield up their secrets. One method of attacking the problem will be to trace the similarities between the original Phoenician alphabet and the Indus Valley script, to spell out a common sonal value, as it is very likely that the Punics might have taken the outlines of their

* This claim is disputed. European Greeks knew the written alphabet only after the 8th century B.C., vide, "World Pre-History by Grahame Clark, P. 162"

** Or the Hittite bi-lingual inscriptions at Karatepe, in Anatolia.

characters from India, although they had used the Semitic language in pronouncing them. For instance "A" (i.e., Aleph or Ox) written in Punic Hebrew, pictured the head of an ox. It may be possible to trace a resemblance in outline between the original "Aleph" in Hebrew and an Indus Valley character, in which case, the sign for the Sanskrit "A" (अ) could be identified. If it could be established that the Punic/Hebrew alphabet bears a resemblance to the Indus Valley seals, then the case for giving the Phoenicians an Indian genealogy would be greatly strengthened. [In fact, a learned German philologist has argued, with the aid of charts, that both the Kharōṣṭhi (which is based on the Hebrew alphabet) and the Brāhmi scripts are derived from the Indus Valley seal-signs].

Prof. Cyrus Gordon, who has done valuable research in the language of ancient Crete, has come to the conclusion that "Crete and Canaan, in the 2nd millennium B.C., formed a single cultural entity, writing essentially the same language and using the same personal names. Herodotus knew about the early Phoenician penetration of what is now Greek territory of Crete. But many modern scholars choose to discount his testimony. It turns out that the Greeks learnt both their systems of writing from the Phoenicians, first the Minoan syllabary, and then the alphabet". It may be added that Prof. Gordon has succeeded in reading, in part, the well-known Linear A script of Crete. He has found some Aryan sounding words in the script, which he attributes to Phoenician intrusion in the island. Some examples given by him are : Ki re ya tu ; he ya sa ; ya sa sa ra mu : ta nu ati ; ya ta no ; Ka du ma ne ; ma na ne ; da ma ne ; Ku ni su ; ku pa nu ; daku se ni.*

Having digressed somewhat, let me resume my narrative about the other great non-conformist Aryan community, which wrote itself into the pages of ancient history in vivid colours and has left behind a militant philosophy and a venerable religion, though with a minuscule following. I refer, of course, to the

* Says Sir L. Woolley, "One need not hesitate to assert that the Cretans borrowed from the older civilisations of the Asiatic main-land the principle of a syllabary". ("Beginnings of Civilisation", P. 652)

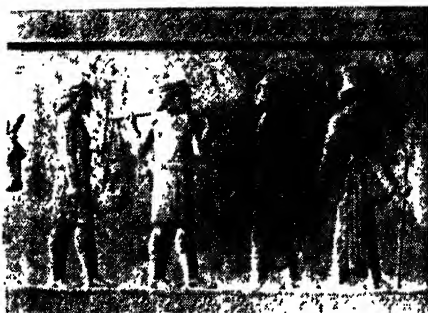
Persians (or the **Asuras**, as they styled themselves, in their ephigraphs).

History calls these people, indiscriminately, **Medes*** and **Persians**, and their early story is clouded in obscurity. On their first emergence from the blankness of pre-history, they showed themselves to be the hereditary foes of the fierce and ruthless **Assyrians** who had usurped power in **Mesopotamia**. There is a reference of 837 B.C. in a record of *Asura* king **Shalmaneser III**, to a people called **Amadai**, or **Madai**, ruled over by 27 chieftain-kings, who inhabited a country called **Parsva**, roughly to the south-east of **Sumeria**. These were of **Aryan** stock and in many respects differed from the **Assyrians**, who were **Semites**. The **Avesta**, (the Bible or the **Veda** of the **Persians**), paints their country in glorious colours as a veritable paradise, but the facts of geography are not fully in accord with this extravagant estimate. The country did possess, however, considerable mineral wealth and a healthy and cool climate in the hills and some good agricultural lands in the plains, interspersed with deserts. The **Western** historians, following their well-known preconceptions, have attributed the original habitat of these people to the **Caspian Sea** area but I suggest that, consistently with my thesis that the **Indo-Aryan** race was autochthonous to greater **Sapta Sindhu**, these **Persians** (or **Medes**) should be considered a branch of the great **Aryan** community, who eventually broke away from the parent fold and set up themselves in an adjacent land, having wedded themselves to a schismatic faith, wholly at variance with **Vedic** tenets.**

* Thus **Col. Tod** : (*Annals of Rajasthan*)

"**Ajamida**, had five sons who spread their branches (*sachae*) on both sides of the **Indus**. Is it possible that they might be the origin of the **Medes**. These **Medes** are the descendents of **Yayathi**, third son of **Manu**. **Aja mida**, the patronymic of this branch, is from *aja*, 'a goat'. In the scripture (*Bible*), the **Assyrian Mede** is typified by the goat".

** **Madame Ragozin** calls the **Hindus** and the **Iranians** "branches of the great **Aryan** stock or race". The word '**Asura**' occurs 26 times in the **Rig Veda** as an epithet of **Indra** and other gods. In the **Avesta**, the word meant all that was good ; the **Devas** were the black spirits.



Indians carrying the gold.



Gifts being presented to Darius.



Gifts being presented to Darius.

TO FACE PAGE 141.

SCULPTURES IN RELIEF AT BEHISTUN

Showing foreign Ambassadors bringing presents to Darius
The Great.

(The top relief shows Indians bringing gold).

The earliest reference to the Pārsus or Pārsvas is in the Rig Veda (vide the Dānastuti), where a Pārāsava is mentioned as the patron of Vatsa Kanva. The Vrishākapi hymn of the Rig Veda refers to a Pārśa Mānavi, a lady cited as the daughter of Manu. According to Ludwig, there are other references in the Rig Veda; (e.g. Kurusravana is declared to be defeated by a Pārsu); he also traces mention of Prthus and Pārsus (i.e., Parthians and Persians) in one other hymn. Weber agrees with these interpretations and Keith also concurs in the identifications of Pārsus with the Persians*. Pānini, the great grammarian, writing about Warrior Republics (Āyudhajivi sangas), mentions the Parsavas as a fighting Aryan tribe, with elected chieftains. Gāndhāra (Kandahar, Pānini's ancestral homeland) and Parsa appear as neighbouring provinces in the Behistun inscription of Darius, the Great, (521 to 486 B.C.) and the king calls himself "a Pārsva and the son of a Pārsva" in that epigraph.** Baudhāyana (circa 700 B.C.), mentions the "Sparsus" as a western people. Kālidāsa, in his Raghuvamsa, carries the victorious Raghu to the country 'of the Pārasikas, "whose maidens were of overwhelming beauty and whose valiant fighters were bearded and moustachioed". Patanjali, the great commentator on Pānini (circa 200 B.C.), mentions three other tribes as falling under "Pārsvādi gana" (or Persian etymological group). These are named Rākshas, Pisācha, and Asura.† Regarding the first mentioned tribe, Pānini says that by adding an "an" suffix, as per sūtra rules, the word form Rākshasa is obtained; thus Rākshasa means a person against whom protection (i.e., Raksha) is required in the performance of

* Rig Veda, VI(27) mentions Hariyupiya as the name of a town at which Indra [i.e. Daivic Aryans] killed the grandsons of Varasika. It has been suggested that this town is none other than modern Harappa, and that the Veda probably refers to a great battle there between Daivic and Asuric Aryans following which the town was abandoned by the Asuras (i.e., Parasikas), who left in a body for foreign lands. If this ingenious surmise be based on fact, the battle must have taken place about 4000 B.C.

** The Rajatarangini calls Persia 'Aryanaka' (Kalhana : IV, Tarangini Verse, 467) which reads: "some say that he (Muktapida) perished by untimely heavy fall of snow in the land named Aryanaka")

† Evidently actual clans or tribes, and not the mythical creations of the grammarian, under Puranic inspiration.

Vedic sacrifices. The name clearly denotes an actual people of very ancient lineage found in the extreme north-west of Sapta Sindhu. To-day there is a tribe called Rākshānis in the Chagai District of Baluchistan. Like the Pisāchas, the Rākshasas fought in the Mahābhārata war on both sides, thus establishing their historicity.

The Pisāchas are stigmatised as consumers of raw flesh. Grierson has demonstrated that Gilgit and Chitral were the home of these people, who apparently even practised cannibalism in the remote past. The Pashai Kafirs of Afghanistan are identified with this tribe, by Grierson. Pargiter remarks that "their subsequent characterisation as demons and evil spirits was a later perversion of their real nature' by the Puranic bards. The language spoken by these people was known as Paisāchi Prakrit, traces of which are often found in Sanskrit literature, particularly in the dramas.

About "Asuras", it need only be said that it is a generic term denoting Aryans who were inimical to Vedic practices and the worship of the Dēvas. The inscriptions of Darius mention "Athura" and "Assura" nations, and in one place Darius calls himself "an Asura and a son of an Asura and the hater of Dēvas and Dēva worshippers". To add point to this "Asura" complex, the Persian kings had a family of hereditary priests whose surname was "Usānasa". It will be recalled that this was the name of Sukrāchārya, the purōhit of the Asuras, in their legendary conflicts with the Dēvas. It is recorded by Thucydides that king Xerxes (Kshaya Arsha = 'abode of faith') had a chief counsellor called 'Usanas' (spelt in Greek Oōsaenas).^{*} The Manu-smṛiti mentions that the offspring of a Brahmin father and a Sūdra wife is called a Pārāsava, a definition apparently intended to show contempt for such mes-alliances, by classifying the offsprings with people not quite within the pale of true Aryan society.

^{*} Sukra was a Bhargava; in the Vedas, the Bhrigus are called fire-worshippers; they are closely allied to the Angirasas. Jamadagni and Parasurama belonged to the Bhrigu clan.

The foregoing remarks leave no doubt that the people known as Pārsvas or Pārsavas, were a branch of the Aryan people, but some what *declassé*, because of their loose habits of life and opposition to orthodox Vedic rites, particularly the famous Sōma sacrifice. It was the historical role of the Medes (or Persians) to have overthrown the Assyrians, that terrible race of warriors who called themselves "children of Assur", i.e., the Asuras of our Purānas. Several of their rulers had Asura names e.g., Asura Banipāla, Asura Nasirapāla etc. These people appear to have been of Semitic extraction, but they probably adopted the nomenclature of the neighbouring Aryan tribes, as a snobbish measure of self-exaltation. In the annals of history, ancient or modern, it is difficult to find a nation more dedicated to bloodshed and indiscriminate slaughter, than the Assyrians*. About 1200 B.C., they overthrew Babylon and built their own capital at Nineveh and Assur. They spread ruin and terror far and wide and even conquered hapless and effete Egypt. Finally, they met their nemesis at the hands of the Persians, who shattered Assyria into pieces about 612 B.C. Thereafter (about 539 B.C.) Babylon itself was subjugated by Cyrus** the Persian, who incidentally, set the captive Jews free. The Persian hegemony (of the Achaemians) lasted over two centuries, till Alexander of Macedon broke like a destructive whirlwind over the Median empire, (about 325 B.C.) and ended the rule of the Achaemians.

In the short space of a generation, Cambyses and Darius† the Great, made the Persian Empire the biggest in the world, of its time. It extended from Libya in the west, to the Sindhu in the east. It reached the Black Sea in the north and covered all the Arabian Sea littoral in the south. At its height, the empire included all the countries now known as Persia, Iraq, Saudi Arabia and minor Arab states; Syria and Lebanon, Turkey in Asia and Europe, Egypt, Ethiopia; Somaliland and Libya in

* Their ferocity and deliberate cruelty can only find parallels in the tales of Asuras in our own Puranas.

** Spelt also as Kyros (Skt. KURU(SH)). He apparently belonged to the KURU peoples.

† Skt: Dharayarasa = Avestan: Daryavush.

Africa. It also included Afghanistan and Baluchistan and all regions now in Pakistan to the west of the Sindhu. The Ionian islands were completely subjugated and even the Greek mainland was invaded, though with qualified success. The strength of the Persian army, reinforced with contingents from India, ("armed with iron-tipped arrows", as Heredotus mentions) was enormous and its training and equipment were exemplary.* A large navy was also maintained (thanks to the help of the Phoenicians). The administration was, on the whole, just and humane, and there was peace and order through out the vast domain. Excellent roads,** elaborate postal services, hospitals for man and beast, parks and public squares, an efficient beauracracy and a disciplined army,—all these bespeak the culture, humanity and efficiency, to which the Persian rule had attained. For many arts and sciences, the Greeks were indebted to the Persians. But in the tendentious chronicles of Hellenic writers, (Heredotus excepted), there is scant evidence of this debt; on the contrary, the merits of the Asiatic enemy are minimised, while his failings are grossly exaggerated, by the Greek chroniclers.

As I said, the Persians were schismatics, if not avowed heretics. They decried the Vedas, and through their Prophet Zoroaster, ‡ (circa 800 B.C.), formed their own religious code, popularly called the Vendidad (Sanskrit=Vēdavāt). The Avesta, which corresponds to the Yajur Veda in some respects, exhibits a dualism, in which a good Spirit (God), addressed as Ahura Mazda (Asura Mahathā), later corrupted into Oromazdes by the Greeks, is opposed by an evil Spirit called Angra Mainyu (Angāra Manyu), later identified with Ahriman (Aryaman). Most cosmos is involved in this struggle, and "all wild beasts and all creeping

* Xerxes had an army of over one million men!

** "The Persians were the first to create a permanent system of roads and to provide for regular maintenance. The Greeks continued with ancient foot-paths and with carriage roads on natural soil. Streets in-side cities were narrow and irregular and without pavements". (The Ancient World, I, P. 130.)

‡ There are various theories about the actual date of this Prophet. West gives him the date 660-583 B.C. Prof. Pareti (The Ancient World, Vol. I, P. 37) gives a date "not later than 1000 B.C.,"

things upon earth" are zealously to be destroyed, as the off-spring of the Evil One. In the result, the wholesale destruction of ants, snakes, frogs, flies and worms became a rite for the expiation of sins. On the other hand, such a dubious creature as the hedgehog, was specially protected "because all night long it destroyed other lives", in its depredations. The dead were neither cremated nor buried; they were exposed to be eaten by bird or dog.* The priestly class, the Magi, were already entrenched in power but under the Achaemians, Persia had not become so priest-ridden as it became under the Sassanids (who ruled the land from the 3rd century A.D. to the 7th, when they were overthrown by the Arabs).

To Zoroaster, there were two ways of life, vitally opposed to each other. One was that of the sky-gods, the *Daevas* (*Dēva*) and the other, that of human beings and of the Law. At the head of the latter stood Varuna, the God of Oaths, and Mithra, the God of Treaties, who between them established the rule of Arta or the Moral Order (the *Rta* of the Vedas). To the Prophet, these moral forces were the only true gods; the *Daevas* were the powers of falsehood (*Druja*), whose worship would lead to sin and ruin. To make the inversion of the Vedic concepts more pronounced, Zoroaster promoted Yama (called *Yima* in the Avesta) to the supreme position among the gods, while Aryaman, (called *Ahriman*), the doyen of the Vedic gods, was relegated to the rule of the nether worlds, and was often personified as the Evil One. The contrast between the Vedas and the Avesta in the matter of theogony is not merely one of semantics. Religion in India (of Zoroasters' time) was mystical, quiescent, world-renouncing and somewhat pessimistic. In Persia, it became militant, emotional, robust in outlook, and firmly anchored to a pragmatic belief in divine intervention and justice. To use the language of Indian philosophy, the ultimate tendency of the Indian religion was 'Sāthvic'; that of the Vendidad can only be described as "Rājasik". "Man must believe in himself and be intensely active; he must live in, and work for, the world, and with God,

* Since the burial ground was called *Dakma* ('burning') in Persian, it would appear that the early Zoroastrians were familiar with cremation.

for the establishment of ARTA, the great moral order" said Ahura Mazda.*

How old was the Zoroastrian (or the Asuric) religion? The Prophet's name is derived from Jarath Twashtār (the creator of Agni) who is named in the Vedas, but the latter make no mention of an Asuric religion as such, although there is a plenitude of indications of schisms, heretical tendencies and even open warfare, arising out of acute religious discord (compare the well-known Dēva-Asura Sangrāma).** There is, however, a reference to a community called Arur-Māghas, who are described as "dvijas" in the Samhitās but who were wiped out by Indra on the alleged ground that they were really Asuras wearing the garb of Brahmins. This story, which is probably based on an actual episode connected with the clashing factions, created a revulsion of feeling against Indra, and there was a violent dissension in the ranks of the orthodox. For a time even the Sōma sacrifice was denied to Indra who was publicly censured, as narrated in the Aitarēya Brāhmana.*** Dr. A. C. Das identifies these Arur-Māghas with the supreme divinity, Ahura Mazda of Pārasika, whose followers were subsequently known as Asuras. Although the latter had ceased to worship Indra and abstained from the Sōma sacrifice, they were still regarded as part of the Aryan community and their priests were treated as Yatis, in Vedic times. Gradually, however, the breach widened and it would seem that the Arur-Māghas left the land of the Five Rivers and settled in Pārasika

* Says Ragozin, "Not only are practices of abstinence and asceticism not praised or encouraged, but—herein Avestan Mazdaism differs from almost every other religion—they are condemned, denounced as foolish and wicked error that strengthens the hands of the Arch-Enemy". She quotes the Vendidad (IV): "And of two men, he who fills himself with good meat is filled with the good spirit much more than he who does not do so." No wonder, this robust philosophy appealed to writers like Nietzsche, vide his "Thus Spake Zarathustra"!

** Since in the Veda, the north was the region of the gods, the Avesta decried the north as the region of the Daevas or Hell. But Ahi and Vrittra, the enemies of Indra were treated as rujas or evil ones (c/f. Ashi Dahaka of the Avesta, where he appears as a bad dragon.) Indra is eulogised as 'Vecriotraen. (Vrittrahan)

*** Aitareya Brahmana VII-35(2). The tale is repeated in the Taittiriya Brahmana also.

after wandering for some time in Bactria, which they understandably called, with their offended feelings, Airyāna Vaejo (i.e. Ārya Bija) or the seed-ground of the Aryan race. Gradually, this name was applied to other areas in adjacent Persia, which accounts for the name (Aryan), being applied to the country as a whole. The Avesta records that, under the leadership of Yima (probably a historical figure), the followers of Ahura Mazda made two daring excursions into the far north of the hemisphere. One took them almost into the circum-polar regions where they left behind a large colony in the area, now known as Lithuania. The other migrants marched east into Outer Mongolia, where interesting relics of Persian intrusion have been recently unearthed. In both countries thus colonised, the local speech got strongly affected by the Indo-Aryan tongue, as I shall elaborate in a subsequent chapter.

The Asuras continued to speak the Indo-Aryan dialects as is proved by the fact that Old Persian is so much allied to Prakrit, that the two are almost indistinguishable. The court language, which is used in the epigraphs, is only one step removed from Sanskrit. The break-away of the schismatics from the Aryan fold was stimulated by certain practices which they adopted in their new homeland. They abandoned the Sōma sacrifice, substituting for this sacred plant pomegranate twigs. They honoured the dog* but not the cow. They had no profound respect for animal life and delighted in destroying it in wholesale fashion. In their marital customs also, they violated Indian sentiment, which had a great horror of incest and considered it a mortal sin, for which there was no expiation.** The Persian

* The dog (with four eyes) was the faithful attendant of Yima, the principal god of the Asuras. Every Parsee corpse is first shown to a white dog with yellow ears (i.e. with four eyes), in order to chase away evil spirits from the body. The dog was 'sacred' to the Parasikas even more than the cow to the Hindus. The punishment for man-slaughter in the Vendidad was 200 stripes; for killing a puppy, 500; a house-dog, 700; a shepherd's dog, 800; and 1000 for a hedge-hog!

** To quote Mons. C. Huart (Ancient Persia), "A question, about which the unanimity of our sources allows no room for doubt, is that of marriage between close relations, (the Khwetuk-Das). Unions of this kind, which were considered incestuous by all religions, except the Egyptian, are recommended by the Avesta".

royalty often committed matrimony within prohibited degrees. (Cambyzes married his own daughter and one of his successors, *his* step sister). Yet taken all in all, the role played by this valiant Aryan community in ancient history is a glorious one. In the spread of civilisation and culture into benighted Near East and into Europe, it achieved no small success and Europe probably remains under an eternal debt of gratitude to it. In Darius, the Great, it produced a conqueror who could rival Alexander in martial skill and personal prowess, but who far surpassed him in the peaceful arts of government.*

* And Darius was himself the scion of a noble race of kings. The greatest of his predecessors was Kyros (Kurush), about whom Ragozin gives the following verdict.

"No amount of fact or details, did we possess them, could materially add to the respect and admiration with which this most majestic and gracious figure inspired both contemporary world and remote posterity. It is not only that he was in the highest sense, a good king we know of. He is, moreover, the first historically approved great and good man of our own race, the Aryan or Indo-European."

The elder brother of Kurush was Airya Ramana and their father was Chishpish. The father of the latter was Hakhamanush (Sanskrit: Sakamanushya) who was the eponymous ancestor of the Achaemians. Persian legends carried the genealogical tree to still earlier rulers, the first of whom was Gayamardhana, the putative ancestor of all the Aryan race, according to the Avesta. He was followed by Havoshyaha, the king of the Paradata dynasty, settled near Mount Hara in East Persia. The great Yima, son of Vivahvant (Sanskrit: Yama, son of Vivaswant) succeeded Havoshyaha and "pressed the Hoama juice exceedingly liberally and gave the land peace, plenty and good climate". Like Adam, however, he sinned and fell from grace, with consequent mundane tribulations to his nation.

NOTE I TO CHAPTER IV

“FALLEN KSHATTRIYAS”

I had mentioned earlier, that Aryans ‘who had left the fold’ or had fallen from their high degree, were known as *Vrātyas*, * who could be redeemed through proper expiatory rites. Another name given to them was ‘Yavana’ which term was also loosely and rather indiscriminately applied by our ancestors to foreign nations adjoining *Āryāvarta*, provided their remote ancestry could, in some measure or other, be traced to the Indo-Aryans. *Manu* mentions the *Yavanas* several times in his famous Institutes, along with the *Sakas*, *Kāmbōjas*, and other rough tribes on the borders of India; but he furnishes them with no geographical or ethnological background. In one place (X., 43, and 44), he states, however, that “the following races of *Kshatriyas*, by their omission of holy rites and by “seeing no *Brahmans*”, have sunk among men to the lowest of the four classes (i.e. *Sūdras*), viz., *Paundrakas*, *Ōdras*, and *Drāvidas*; *Kāmbōjas*, *Yavanas*, and *Sākas*; *Paradas*, *Pahlavas*, *Chīnas*, *Kirātas*, *Darādas*, and *Khāsas*”. All these tribes, along with several others, are generically named by him *Dasyus*, or wild people, who though descendants of the four original castes, by mixing promiscuously with each other and neglecting their religious observances, had been degraded as *Sūdras*. Elsewhere, these tribes are also called *Vrātyas* (or mulattoes). The *Aitarēya Brāhmaṇa* also, gives the name of *Dasyu* to these fallen tribes; very often, the description *Mlēccha* was also applied to these degraded persons, without, however, necessarily connoting them to be non-Aryans.

The *Mahābhārata*, following *Manu*, describes these people thus: “These tribes of *Kshatriyas*, viz., *Sakas*, *Yavanas*,

* The *Pancha-vimsa Brahmana* says that although the *Vratyas* *adikshita* (i.e., not consecrated) they spoke the *dikshita* language. The *Vedic Index* considers the *Vratyas* to be Aryans, by race and language.

Kāmbōjas, Drāvidas, Kalingas, Pulindas, Usināras, Kōlisarpas and Mahisakas, have become Vrishalas* from "seeing no Brāhmanas". Elsewhere, the epic describes the Yavanas to be the descendants of Tūrvasu, the second son of Yayāti, and grandson of Nahusha. Their descendants were apparently degraded as Vrātyas, for neglect of filial duty. The tribes in question, though *declassée*, were, however, not altogether left out of the pale of Brahmanical institutions, and Dr. Muir quotes a long passage from the Mahābhārata to show what they were enjoined to observe by way of religious practices and social duty.

In the Karna Parva, Karna, in describing to Salya the different sub-grade races of mankind with which he had come in contact in different parts of the earth, names the Yavanas, who are said to be 'omniscient and especially heroic'. In the Sānti Parva, Bhishma, in reply to certain queries of Yudhishtira, describes the martial peculiarities of certain races thus: "The Gāndhāras and Sindhu-Sauvīras are most proficient in fighting with many-pointed javelins; the dauntless, vigorous and powerful Usināras are proficient in the use of every kind of weapon, and their might is equal to every undertaking; the Prāchyas are unfair fighters, but experienced in elephant fights; the Yavanas, the Kāmbōjas, and the dwellers on the frontier of Mathurā are proficient in fighting hand to hand without arms; the Dākshinātyas fight best with swords and shields".

* Vrishala=a member of the 4th caste. The following quotation from an ancient work, called Jatimala, (Garland of Castes) will be perused by the reader with interest :

"In Jambudwipa, Brahmanas are reckoned ten fold: Sarasvata, Kanyakubja, Gauda, Maithila, Utkala, Dravida, Maharashtra, Tailanga, Gurjara, and Kashmira. Their sons and grandsons are considered as Kanyakubja, priests and so forth. Others reside in Anga, Banga, Kalinga, Kamarupa and Odra as also Sambudesa. Twice-born men have also been established by princes in Rada, Magadha, Vanendra, Chola, Swarnagrama, China, Kula, Saka and Barbara". Swarnagrama is probably Burma; China is obvious. (Kula?) Saka is probably Indo-Scythian country; and Barbara is, almost certainly, Mesopotamia.

Dr. Rajendralala Mitra makes the following comments on these peoples in his book, "The Indo-Aryans". "Of the several races or tribes here mentioned, the Gāndhāras are the people of Kandahar; the Sindhu-Sauvīras are a tribe who dwelt on the banks of the Indus; the Usināras are people to the south of Kandahar; the Prāchyas are the eastern tribes of Manipur, Tripura, &c, the Kāmbōjas are said to dwell in the north-western frontier of India, their country being famous for its horses, and we have to look for them near the Hindu Kush; and the Yavanas*, who are always spoken along with them, must be their neighbours, probably Bactrians."

The Vishnu Purāṇa follows the Mahābhārata very closely, and in describing the boundary of India (Bhārata-varsha) says, "Its eastern border is occupied by the Kirātas, and the western by Yavanas, while the middle is inhabited by Kshatriyas, Vaisyas, and Sūdras, engaged in their several fixed occupations of sacrifice, war, trade, &c."

According to the orthodox school in India, the word Yavana is derived from the root 'Yu=to mix', thus implying that the race was a mixed one in the sense of not being bred of the four pure castes, in the manner approved by the Sāstras. Another school would derive the word from Sanskrit 'Yuvan' or youthful. Says Dr. Mitra; "Should this latter derivation be accepted, it would not be necessary to suppose that the word Yuvan travelled from Asia Minor to India; on the contrary, its similitude with the Latin *Juvenis*, Saxon *iong*, Dutch *jong*, Swedish and Danish *ang*, Gothic *jungs*, and Zend *yioan*, would indicate it to be one of those domestic terms which travelled with the Aryans in their various migrations from their common home".

The word, as a tribal designation, seems to have been well-known and current in Sanskrit from very early periods. Pāṇini, in his great work on Sanskrit grammar, gives it in the form of *Yavanāni*, as an example to show the use of the affix *anuk*, to indicate the *writing of the Yavanas*. "This implies that it was a

* Sukra locates the Yavanas to the north and west of Aryavarta and calls for the study of "the theories of the Yavanas and the manners and customs of countries and nations" (IV 55-59).

current word at his time, at least nine or ten centuries before the commencement of the Christian era, according to the calculation of the late Dr. Goldstucker." (Dr. Mitra). How long before that time it was familiar to the Indo-Aryan peoples cannot be determined exactly but it may safely be concluded that it was not in the sense of the Greeks, whether Asiatic or European, that it was used by Pānini and his predecessors. "According to the most recent researches on the subject, the art of writing was not introduced into Greece before the seventh century B.C., and Pānini could not possibly, therefore, refer to Greek writing two or three centuries before its formation. Even if we accept Professor Max Muller's date for Pānini, i.e., the early part of the sixth century B.C., it would still be presumptuous to believe that Pānini had come to know of the introduction of writing into Greece so soon after the occurrence", adds Dr. Mitra.

The views of the learned Dr. Mitra lend authority to the theory, that there were, from very ancient times, an emigration of tribal communities of Aryan extraction, from Sapta Sindhu to outlying territories, mostly to the west of the Indus. These people were gradually stigmatised as "fallen Kshatriyas," since they lost the purity of the religious and social observances, as prevalent in the Aryan homeland. This fact immeasurably strengthens the case for considering India to have been the cradle of the Aryan race; otherwise, it would be the Greeks, Bactrians, Persians and Scythians who would be considered as true conformists, and the inhabitants of Sapta Sindhu as "fallen Kshatriyas". Orthodoxy remains strongest around the centre of its genesis.

NOTE II To CHAPTER IV

THE ANCIENT MARINERS

The Indo-Aryans were probably the earliest sea-going people in the world. They were certainly the greatest in history, as the facts contained in my present writings will demonstrate. There is no nation, ancient or modern, which has excelled the Indo-Aryans in navigational skill, given the primitive equipment and the exiguous geographical knowledge, of pre-history.

That in the time of the Vedas, and for some time afterwards, the Indo-Aryans were familiar with ships adapted for sea voyages, is a fact which is now no longer doubted. The frequent mention, in ancient Sanskrit literature, of ocean-bred pearls which could not have been procured without the aid of boats that could brave the ocean-wave, is of itself sufficient evidence on the subject. But others are not wanting. Allusions to the ocean and to ships are numerous, even in the ancient Riks. "The greatness of the Agastyas," is said to be "as profound as the depth of the ocean". "He, Varuna, who knows the path of the birds flying through the air, he, abiding in the ocean, knows also the course of ships."* "May Ushas dawn to-day, the exciter of chariots which are harnessed at her coming, as those who are desirous of wealth (send ships) to sea".** "Do thou (Agni), whose countenance is turned to all sides, send off our adversaries, as if in a ship to the opposite shore", (a remarkable prayer for transportation at so early an age). "Do thou convey us in a ship across the sea for our welfare". Again, "Verily Asvins, Tugra sent (his son) Bhujyu to sea, as a dying man parts with his riches; but you brought him back in vessels of your own, floating over the ocean, and keeping out the waters. Three nights and three days, Nāsatyas, have you

* Rig Veda, I, 25(7): Sails are mentioned in Rig Veda, X, 143(5).

** Rig Veda I, 46(2); In Rig Veda, VI, 120 and IV, 30, it is said that Indra brought back to Sapta Sindu, Yadu and Turvasa who had gone to live on the farthest ocean shores as unanointed kings.

conveyed Bhujyu in three rapid, revolving cars, having a hundred wheels, and drawn by six horses, along the dry bed of the ocean to the shore of the sea. This exploit you achieved, Asvins, in the ocean, where there is nothing to give support, nothing to rest upon, nothing to cling to ; that you brought Bhujyu, sailing in a hundred-oared ship, to his father's house".* This story of Bhujyu is repeated in a subsequent hymn where the "tossing ocean and swift ships" are again alluded to. Again, "you constructed a pleasant, substantial, winged bark, borne on the ocean waters for the son of Tugra, by which, with mind devoted to the gods, you bore him up, and quickly descending (from the sky,) you made a path for him across the great waters. Four ships, launched into the midst of the receptacle (of the waters, sent by the Asvins,) brought safe to shore the son of Tugra, who had been cast headlong into the waters, (by his foes,) and plunged in inextricable darkness". Agni is prayed in one place "to bestow a boat fitted with oars." The great sage, Vasistha, declares, "When I (Vasistha) and Varuna ascend the ship together, when we send it forth into the midst of the ocean, when we proceed over the waters with swift (sailing vessels), then may we both undulate happily in the prosperous swing. So Varuna placed Vasistha in the ship, and by his mighty protection made the Rishi a doer of good works."**

The Kapinjala bird is said "to foretell what will come to pass, by giving due direction to its voice, as a helmsman guides a boat". Professor Wilson§ says, "The same familiarity with the sea, that has been previously commented on, occasionally occurs with sufficient explicitness to leave no doubt of the meaning of the text : thus in one place the rivers are said, 'to rush to the ocean eager to mix with it' ; and again, the 'rivers disappear in the ocean', where also it is said that 'those desirous of profits are engaged in traversing the ocean', clearly indicating maritime traffic : the Maruts, or personified winds, are said 'to toss the clouds like ships,' or as the Scholiast amplifies a rather elliptical

* Rig Veda, I, 116(4). The cars are boats; the wheels are oars and the horses are sails.

** Rig Veda, VII, 88(3).

§ In his Introduction to the 'Translation of the Rig Veda.'

phrase, 'as the ocean tosses ships', in another place. It is undeniable that the passage is intended to convey the idea of the crossing of the ocean by certain individuals under the guidance of Indra". At a later date, Manu lays down rules for the guidance of maritime commerce;* and the Rāmāyana alludes to merchants, who traffic beyond the sea and bring presents to the king (III. 237). In the Mahābhārata, mention is made of a large boat provided with machinery, which could defy the hurricane; but it was intended for moving only on a river. The Arthasāstra of Kautilya has a plenitude of information about ships, peaceful and otherwise, and of the laws of navigation. "The Superintendent of ships shall show fatherly kindness to it, whenever a weather-beaten ship arrives at port". "Pirate ships or vessels with the enemy, shall be destroyed". "Foreign merchants should be allowed free access to ports, to which entry should be regulated by passes".

Kālidāsa, in the Śākuntalā, gives the story of the merchant Dhanamitra, whose immense wealth devolved to the king, on the former's perishing at sea, leaving no heirs behind him; and in the Hitopadēsa, a ship is described as a necessary requisite for a man to traverse the ocean, and a story is given of a certain merchant, "who, after having been twelve years on his voyage, at last returned home with a cargo of precious stones". The details of Vijaya Sinha's expedition to Ceylon are familiar to the readers of the history of that island, Arrian alludes to the *kolandiphontas*, (apparently a corruption of the Sanskrit Kālāntarapata,** "ships for going to foreign shores",) or "large ships on the coast of Travancore, in which the natives traded to Bengal and Malacca," in contradistinction to the *monoxyla* of Pliny, which was probably

* Indian teak has been found in the ruins of Ur (3000 B.C.) and sindhu or muslin cloth, carried by sea, was used in Babylon. The Baveru-Jataka contains a wealth of material concerning sea-trade between India and Babylon (6th century B.C.). Commenting on this Jataka, Buhler says, "This trade probably existed in much earlier times as the Jatakas tell of other and earlier voyages and mention old ports like Supararka and Barukachcha (Sopara and Broach) - Says Kennedy "Maritime trade flourished between India and Babylon in the 6th & 7th centuries B.C."

** Kala=deep (ocean); anthara=further (side); pata=flying (travelling),

a sort of dugout (later very numerous in Polynesia) made of one log, for coastal and river trade.

The Pāli canonical texts speak of voyages lasting six months in ships (*nāvā*), which could be drawn up on shore in winter. The Jātakas, above all, have preserved memories of voyages of daring Indian merchants beyond the seas and lands, to distant countries of the east and the west. References are made in these works to merchants voyaging from Champā or Benares to the mysterious land of Suvarṇabhūmi which has been proved to be a generic title in those days for Burma, the Malay Peninsula and the Malay Archipelago. We hear even of merchants voyaging from the great western sea-port Bharukachchha to the same destination, obviously *via* a Ceylonese port. Indeed, Ceylon (*Tāmbapanni*), at that time was 'another bourne of overseas commerce'. We also learn how, another body of merchants travelled from Benares to Bāvēru (Babylon). Tamil literature, of ancient date, mentions the people of the Coromandel coast as Tiraiyar (i.e., sea-going people). A Pandyan king sent an embassy to Emperor Augustus Caesar (1st Century B. C.).

Other notices of the sea and ships may be multiplied *ad libitum*, to show that the ancient Hindus were accustomed to venture out on the "black waters" in search of wealth.* This inherited navigational skill, extreme hardi-hood and daring, stood the descendents of these Indo-Aryans in good stead when, centuries later, they had to wend their precarious way over the dreary water-wastes of that ocean, wrongly called 'the Pacific', as described by me elsewhere.

* Thus P. C. Chakravarthi ('The Art of War in Ancient India' P. 59). "The old notion that the Hindus were essentially a land-locked people, lacking in a spirit of adventure and the heart to brave the seas, is now dispelled." The learned author quotes many references to fighting ships (or navies), and cites Manu as saying that naval units should be employed in hostile waters, (VIII, 192). Both Strabo and Arrian mention that the Persian Rulers were harassed by maritime intruders from India, who were treated as pirates.

CHAPTER V

A FORGOTTEN HINDU EMPIRE ON THE MEDITERRANEAN

I now embark on a task especially congenial to an Indian, namely, the narration of the story of a great Aryan kingdom, which had been lost to human memory for over 3,500 years, the threads of which we are just beginning to unravel. This is the tale of the Empire of the Hittites.

The word Hittite is a corruption, by the Hebrews, of the word Khatti or Khēta of the Egyptians, which again is a Prākṛit form of the Sanskrit Kshatriya. (For the purpose of this chapter, I shall use the appellation of Khēta both for the Empire and for the people). The Khētas figure in the Old Testament as one of the peoples occupying Syria and Palestine. When the Israelites entered the Promised Land, Abraham bought some real estate from one Seth, a Khēta, the legendary date being 1800 B.C. Solomon had wives from this nation and did some trade in horses with the "Kings of Hittites", whose reputation as warriors was high in Israel. In the 15th Century B.C., when Tuthmosis (or Thothemus) III was the ruler of Egypt, he had contact with a people in Syria, named Khēta. These very people, along with their numerous allies fought Ramesses II (the Great) of Egypt at the battle of Kadesh (as will be detailed later). Certain Assyrian inscriptions of circa 1100 B. C., mention Syria as the 'land of the Hatti' with its capital at Carchemesh. It is clear that Hatti, Hittite, Khatti and Khēta all refer to the same people, a branch of Indo-Aryan community, who seem to have flourished in Asia Minor and Syria, for several hundred years in the 2nd millennium B.C.

Till about 100 years ago, however, nothing was known in detail of these people, although they ruled over an empire of considerable size for nearly 500 years. Since then, some details of Khēta history have been ascertained from archeological and other data, although the information is still meagre. The capital of the

Empire of the Khētas was a hundred miles south of the Black Sea at Hattusas (Sathwasa), now known as Boghaz Keui (Bhōgas-chāya i.e., the shadow of Bhoga or Baga, a supreme deity of the Aryans). The city lies on a ridge over-looking broad plains in the region called Cappadocia by the Greeks, but whose real name was Katpatuka, which name was also used in the inscriptions of Darius, (I), of Persia. The Aryan Khētas seem to have superimposed themselves on an earlier population, which was perhaps non-Aryan, (as the linguistic evidence shows), and this must have happened earlier than 1800 B. C. (Some Assyrian tablets of about 1800 B.C. mention some Khēta names in this region). The Empire had not been born then and the whole area was split up among several princelings, one of whom called himself Great Prince (mahārājan) and ruled at Purushkanda ("fortress of the Purus", an ancient Aryan name, well-known in Sapta Sindhu). Other Royal clans are also mentioned; that under Anittas (Anitha) the son of Pitkhana, who fought the rulers of Nesa. Purushkanda, Salatitara and Sathwasa, is the first on record. There is considerable confusion about the sequence of events after Anittas. Later Khēta kings traced their ancestry to one King Labarna (Lavana?), a famous warrior who subdued his neighbours, one of whom was the ruler of Purushkanda. Mention is also made of a kingdom called Arzava (Arasava—sapless, inhospitable), which bordered on the Mediterranean. The next king, traced in the archaeological records, is Hattusilis I (Sathvasila), who perhaps built the capital at Hattusas (Sathvasa). The kingdom of Khēta continued to expand and the successor king Mursilis (Murasila), ventured to attack the Amorrite kingdom of Babylon which was overthrown, sometime after 1600 B.C. At this stage, there was a palace revolt in Hattusas and King Murasila was assassinated by his brother-in-law, who himself was succeeded by another usurper named Telepinus (Dilipa or Dilipana?) about 1525 B. C. This ruler consolidated his territories, which were now greatly reduced in size, and introduced a legal system, which lasted till the end of the empire. He resigned himself to the loss of some of his possessions and even made a treaty with the intransigent king of Kizzuwatna (Kishōri Vardhana=Horse-farm City). He was followed by a few unimportant sovereigns about whom not much is

known. Sometime later, Tudhaliyas II (Dugdālaya) founded a new dynasty, which however, faced a stormy beginning. The kingdom of Mittani, (described elsewhere), had meanwhile risen to power, and in alliance with numerous other vassals of the Khētas, it stirred up a rebellion which ended with the sack of Hattusas. After about a hundred years, i.e., in 1380 B.C., a new ruler arose in Khēta-land whose name is read as Suppiluliumas by the Western archaeologists (the name probably means :—"He of the golden hair"; "Supilu Lōma", in Prakrit)*. He rebuilt and fortified Hattusas and made war on the Mittanis, who under King Tusratha (Dasaratha) at first repulsed him with heavy losses. In a subsequent campaign, the Khēta king succeeded in taking his rival in the rear by marching through Malatya (hill country) and descending suddenly on the Mittani capital of Wassukanni (Vasu Karnaka—beautiful hill) which surrendered, since Dasaratha preferred to retreat to the mountains, rather than fight pitched battles. Syria was then conquered and the Khēta king advanced up to Lebanon, then an Egyptian outpost. Thanks to the pre-occupation of the then Pharaoh, (Amenhotep IV or Akhenaton) with his religious experiments, no resistance was met with and Alalakha, the Lebanese capital, became a Khēta possession,

Meanwhile, Dasaratha was weakened by internal strife in his own kingdom and by the apathy of Egypt, with which he was matrimonially allied, his sister being the famous Nefertite (Nesh-thika), the wife of Akhenaton and the "most beautiful Queen in history, not excluding Cleopatra" as Tomlin says. Dasaratha was assassinated and was succeeded by Artha Dharma and then by Sudharma. The latter was powerful enough to help free Assyria from dependence but failed to consolidate his own power in Mittani. Suppiluliumas again invaded Syria and reduced Carchemesh and put his son Piyassilas (Priyasila) on the throne of the city. The king of Kizzuwatna (Kishorī Vardhana) was made an ally and the fame of Suppiluliumas reached such heights that the widow of Pharaoh Tutankhaman, Queen Ankhenan (a daughter of the "heretic King" Akhenaton) wrote to him, through

* Curiously enough, "Suvarna Roma" is a name found in the royal line of Mithila.

an ambassador, asking him to nominate one of his sons as her second husband, as she feared that, otherwise the throne would be usurped by strangers to the royal line.* The Khēta king complied with this strange request, but the would-be Pharaoh was murdered on his arrival in Egypt by the head-priest,** who promptly seized the throne and married the helpless widow, doubtless under duress. Shortly after this event, Suppiluliumas and his elder son Arnawanda (Arna-bandha—Destroyer of foes and rebels) both died in an epidemic and the throne descended to an younger son named Mursilis (Murasila), who proved to be as able as his distinguished father. In a series of brilliant campaigns he crushed the disaffected monarchs under his suzerainty and supplanted them by Khēta princes. When Syria broke into revolt, apparently at the instigation of Egypt, it was subdued in a lightning attack. He overthrew Babylon and defeated the Kassite king, circa 1325 B.C. Mursilis was succeeded in 1306 B.C., by his son Muwattalis, who had to face a fresh threat from the Egyptian colossus. About 1300 B.C., Sethos I attacked Syria but was repulsed. His successor, Ramesses II,*** (the Great) had a violent passage-at-arms, in 1286 B.C., with Muwattalis at Kadesh. In his temple records, Ramesses claims a great success, (with considerable capture of prisoners);§ his much vaunted victory however does not accord with the facts of the case, as,

* The Queen's eloquent letter has survived; it reads thus:

"Why do you say 'They may try to deceive me'? If I had a son, would I write to a foreign country in a manner humiliating to me and my country? He who was my husband died and I have no sons. Shall I take a servant of mine and make him my husband? I have not written to any other, but only to you — People say you have many sons; give me one of them and he shall be my husband and King of the Land of Egypt."

** Whose name was 'Ai' or Ay (which is a name of Siva!)

*** Glyphed Rama-essu in Egyptian hieroglyphs. It is curious that this name which bears a strong resemblance to Rama Isa, makes its first appearance in Egypt with Rama-essu I (1328 B.C.) after Aryan contacts, including matrimonial alliances, had developed.

§ Ramesses II also married a Kheta princess, about whom he records, "She was beautiful in the eyes of His Majesty and he loved her more than any thing."

evinced by Khēta sources, which reveal that Syria continued under Khēta domination and that Muwattalis was even able to augment his coastal possessions on the Mediterranean. His successor, a son through a concubine, was dethroned in 1275 B.C., by his uncle Hattusilis III (Sathvasila), who ruled for 25 years, showed himself to be an able and humane monarch, and gave the Khēta kingdom an era of peace and prosperity. In 1269 B.C., a fresh treaty was concluded with Egypt, (which is famous as a historical record) and a Khēta princess was eventually wedded to Ramesses II. The last years of Hattusilis III were troubled, both through restive allies, and his own uneasy conscience regarding his dethroned nephew, whom he seems to have treated rather gently. He has left an apologia, (written on tablets), explaining his conduct, as due to great and insulting provocation from his nephew, as well as a positive command to assume the throne, from the Goddess of Samūha, (a famous religious centre in the kingdom). As Gurney says, "This testament, though tendentious, as evidence of a highly developed political conscience, is unique in the ancient world". One could, perhaps, compare (and contrast) it with the famous "sermons on stones" of Emperor Asoka, issued soon after his Kalinga campaign, voicing his contrition at the terrible slaughter which had resulted from this war.

The end of this great Hindu empire, (which at its height embraced practically the whole of Turkey in Asia as well as Syria), was not far off. The king of Ahiyava (Colchis?), apparently a vassal Greek state, and one Maddu Wattas (Madhu Vācha) started trouble in the reign of Arnu Wanda IV (1220 to 1190 B.C.) and, in league with a powerful minister named Attarissiya (Ashta Rishiya), attacked the emperor, who was also faced with the revolt of the king of Mushki, named Mittas (Mitra). The enfeebled empire was unable to stand this double shock and it is likely that it crumbled to pieces about 1190 B.C., when Arnu-Wanda IV appears to have died. The Khēta royal family apparently fled into Syria and the vassal islands, (probably Cyprus).

and other neighbouring islets). The Phrygians* soon displaced the Khētas in their home-land in Anatolia, but the remnants of this great Aryan race survived for another 500 years in north Syria, till they were finally overthrown by the terrible Assyrians.

Thus ended this exotic and forgotten western empire of the Hindus, after having lasted for nearly 500 years (from about 1700 B.C. to 1190 B.C.). Its known achievements and relics are considerable; unfortunately, in the quake-ridden area over which they ruled, many of the monuments and other structures of the Khētas have been destroyed for ever, (unlike in Egypt with its sandy and stable soil, and excessively dry climate). Much of the later history of this great Hindu community has had to be compiled from stray references in the Bible, and the records of the Pharaohs, especially the famous Tell-el-Amarna letters, a magnificent collection of tablets, in cuneiform script and in Akkadian language, containing the diplomatic and administrative correspondence of the "great schismatic", Icchnaton, and of his father, Amenophis III, (covering roughly the period 1400-1350 B.C.). These letters convey a fund of information regarding the Khētas, who seem to have maintained an active diplomatic intercourse with the Pharaohs. (There is, actually, a letter of congratulation to Icchnaton, on his accession, from King Suppiluliumas). The Egyptian records were vitally supplemented when, in 1907, came the momentous discovery, by Dr. Hugo Winkler, of over 1000 cuneiform tablets, at Boghaz-keui (Sathvasa), constituting a full-scale royal archive, and including in it the Khēta version of the famous treaty between Hattusilis III and Ramesses II. Subsequently, there occurred several lucky finds of stone and other monuments, containing Khēta inscriptions. One such, the well-known Aleppo stone, was considered to be so sacred, that innumerable Moslem natives had kissed it, as a cure for ophthalmic disease, thus wearing out the writing in places. Similar engravings have

* The Phrygians were derived from a pre-Indo-European people fused with the Indo-European Briggians, according to "The Ancient-World," (Vol. I, P. 10). Herodotus (V. 3) called the Thracians or Phrygians the most numerous people in the world after the Indians, and the most ancient, also after the Indians.

also been discovered at diverse foreign places, like the tablets of contemporary date found in Assyria. But the most important of the archaeological discoveries was the location of hiero-glyphic monuments at Karatepe (Karthapa) in Anatolia, in bilingual script, (i.e., in Khēta pictograph, with Akkadian cuneiform translation).

Despite these bilingual finds, it cannot be said that the original Khēta hiero-script has been read satisfactorily. It is, to a large extent, still undeciphered, especially as regards the history of the minor Khēta kingdoms of Syria. As I had indicated, the fall of the empire in 1190 B.C., did not mean the disappearance of the Khētas from the stage of history. There was a strange after-glow of Khattri glory, for no less than four or five centuries, in a southern corner of the empire, i.e., in Syria and the Taurus mountain region. From Assyrian records, it would appear that Syria harboured several monarchs, bearing names very similar to those of the Khēta empire. The Old Testament refers to "Kings of Hatti" as ruling in Syria, round about 1000 B.C. Numerous inscriptions, in the still obscure Khēta hieroglyphs, have been unearthed in this region. This Khēta tradition lasted until Syria and Palestine were overrun and annexed by the Assyrians, between 750 and 725 B.C. The cities in this neo-Khēta area all bore Sanskrit names, like Kizzu Wattana (Kishori Vardhana - breeding place for horses), Shinakthu (Vedic Shanaktu), Tuwana (Tungavana - Mountain Forest), Huvisana (Suvasana - good for living), Ishtunda, Malatya (hill-born), Marqusi (Mārgasi) etc. The kingdoms, of which these were the capital cities, also boasted of Sanskrit names like Kammanu (Karmāna), Kummukhi (face of the earth), Arpad (Arpatha), Yadhya (Yathya - hermit land), Hattina (Hastina - Elephant land), Luhoothi (spoilt sacrifice). (Luhoothi is the modern Aleppo district, with its capital city, Aleppo, formerly called Hatarikha). The most southerly of the neo-Khēta kingdoms was Hamath (or Samartha), prominent in the Bible.

It is on record, that these tiny Aryan States survived on the Mediterranean littoral for over 400 years i.e., from 1190 B.C.

to 725 B.C. Unfortunately, much is not known about these kingdoms since their picture-writing, as exhibited in their monuments, has not been deciphered yet ; their career has had to be, therefore, reconstructed mainly from foreign records—Assyrian, Egyptian and Hebraic. It would appear that, several times, they joined in a confederacy and resisted Assyrian attempts at domination. Unluckily, fissiparous tendencies, (the bane of Kshatriya princes all through the ages,) continuously re-asserted themselves, with the result that they fell an easy and piece-meal prey to the powerful monarchs of Nineveh and Assur. The Aryan kingdoms, however, left a deep impress on the local population in culture, religion and the arts of life. A great historian (Will Durant) asserts that the long noses, often met with in the Syria, Lebanon and Palestine areas, are the result of racial inter-mingling of the local population with the long-nosed people from Sapta Sindhu. (A comparison may be sought in the nasal index of the Kashmiris, who were once thought to be one of the Lost Tribes of Israel, on the same facial evidence, by the early European visitors to India !) In Durant's words, "this Hebraic feature must now be considered strictly Aryan."* The neo-Khētas flooded the country with temples and images, many of which still survive, despite the unthinking vandalism and iconoclastic zeal of the Arabs, who have dominated these areas, for hundreds of years, since Prophet Muhammad's time. One such surviving relic is at Mecca ; it is a historical fact that the famous black stone at the Kaaba was, originally, an object of Hindu worship. (Kalhana, in his *Rājatarangini*, mentions that one of the kings of Kashmir made a special pilgrimage to Mecca in the 6th century A.D., to worship at the Hindu shrine containing this stone). The Koran indicates the wide prevalence of image worship in these areas, accompanied by sacrificial rites and other observances familiar to the Aryan peoples, till the Prophet and his fanatical followers made a clean and quick sweep of all these 'pagan superstitions', in a manner far from gentle.

A word about the geography of the old Khēta empire may be useful. The whole (peninsular) area, (i.e., Turkey in Asia

* The Khabiru had a penchant for Aryan wives or concubines. The Bible instances many such racial inter-mixtures. The episode of David and Bathsheba is not an isolated one. Solomon's numerous wives included many of the Kheta race.

today) was generally known as Kat-patuka (broken hills and valleys), corrupted into Cappadocia by the Greeks. The various Khēta provinces were known as Assura, Arsava, Pitassa, Kishorī-vārdhana, Assi (Ayassi-pertaining to iron), Sāmūha, Hayasa, Isura (Iswara) etc. The several rivers, flowing into the Mediterranean and the Black-Sea, also bore Sanskrit names - Schitiyā, Murasandhyā, Ashtārpa, Varunthā (Greek Orantes), to name a few. The island of Cyprus was probably called Alasia by the Aryans, although, the identification is not positive. (The name of the island's capital city, Nicosia, has however, an unmistakable Aryan sound).

There has been considerable controversy over a region called, in Khēta texts, Ahhiyawa or Ahhiya. E. Forrer was inclined to identify Mycenaean Greece with this name; Sommer and other scholars think that Ahhiya should be in Asia Minor itself. Gurney keeps an open mind in the matter and would wait for the results of further epigraphical research. It appears to me, however, that the name should refer to a Greek island, since Ahhiya or Ahhiyawa means the land of Ahi or the dragon, probably, peopled by Yavanas or Greeks. It is possible, but not probable, that Colchis, the Black-Sea island, connected with the story of Jason and the Golden Fleece guarded by a dragon, can be identified with Ahhiya. That Khēta monarchs were orthodox Hindus and were opposed to the Ahi cult, is well established, as will shortly be elucidated. In view of certain recorded incidents connected with Ahhiya, it is reasonable to infer that this small kingdom (which was close to another island, called Miliwata (Mitha Vāta - pleasant winds), was an important island, near the Anatolian coast, in which the cult of the dragon had been in vogue.* Another curious fact, connected with the Ahhiya episodes, is the mention of a local king named Alaksanda, whose name sounds very much like Alexander, which was the real name of Paris the Trojan, son of Priam (or Priyam), who is alleged to have enticed Helen of Greece into Troy,** with most fatal consequences to that city.

* The island of Rhodes is the best bet; it is close to Miletus (Miliwata?).

** Troy, or Illium (Hisarlik) is situated on the Bosphorous, near the entrance to the Black Sea.

An attempt may now be made to reinforce the case, for viewing the great Khēta empire as a Hindu realm, peopled by Aryan clans, who had migrated westwards from Sapta Sindhu, soon after the Rāma-Rāvana war, i.e., about 2000 B.C., according to my suggested chronology. I had mentioned that the traditional founder of the so-called Hittite race, was King Labarna, son of Pusaramīnas. (Is there a confusion here with Lava (na) and Parasurāma?). I suggest that this name might have some connection with Lava, son of Sri Rāma of Ayōdhyā, whose descendants might have led the Rājanya families, related to the Solar race of kings, out of Sapta Sindhu in a quest for new lands and adventures, towards the regions of the setting sun, and far away from Āryāvarta.*

Kingship in Khēta was hereditary but the king had to have his nominated successor approved by the general assembly of nobles (the Sabhā of Pāṇini), as was the case in contemporary India. The prince, thus selected to succeed, was normally a son of the "wife of the first rank" (the Pattamahishi in Hindu terminology) but failing a son by any wife, a son-in-law could be nominated in Khēta. (This was apparently an innovation, introduced by King Telepinus in Khēta, to ensure stability of Royal succession**). This relaxation of the rigid rule of heirship

* Thus Dr. R. K.¹ Mookerji, (Hindu Civilisation I. P. 153)

"Indian tradition knows of no Aryan invasion of India from the north-west or from outside India. On the other hand, it speaks of an Aila (Aryan) outflow, the expansion of the Druhyus through the north-west into the countries beyond. This is in keeping with the Rig Veda. This view is further supported by the mention of the Vedic gods, Indra, Varuna, etc., in the Boghaz-keui inscription of 1400 B.C., proving that there was an outflow of people from India before the 15th century B.C., bringing her gods with them. Pargiter goes further and works out a date for this Indian migration beyond the north-west. It is the Druhyu expansion which is indicated 55 steps earlier than the Bharata Battle, in the geneological table drawn up in the Puranas. If 12 years are allowed for a step, the date of the Druhyu migration out of India would be 660 years (12 x 55), previous to the Bharata Battle of about 1000 B.C. Thus, it took place in the 17th century B.C., (which explains the Hindu gods being mentioned at Boghaz-keui.)"

If the Great War took place in 1400 B.C., the outflow would have occurred in 2100 B.C.

** Such a succession through females, is noticeable in other Aryan accultured countries.

was so successful that when King Muwattalis died without a son from his legitimate wives, the throne passed to the son of a "kept woman", without much trouble. The rulers styled themselves 'Great kings' (Sārvabhouma), as in India. The earlier kings added after their names "Tabanna" as a title, which seems to refer to 'Tapanā' or the Sun, as an indication of the rulers being of the Sūryavamsa. (Gurney is probably mistaken in thinking that Tabanna is a corruption of 'Labarna', the name of the traditional founder of the Royal line). This assumption is confirmed by the fact that the sign for 'Tabanna' was later substituted by a pictograph meaning 'Sun', followed by the symbol of the winged Solar orb, as a sign of royalty. The Khēta kings also used the titles 'Hero' (Vikrama) and 'Beloved of the Gods' (Dēvanāmpriya) as done generally in India. A dead king was always described as 'having joined the gods', a phrase familiar to the Indians.

The king was the supreme army chief, as well as the highest judicial authority, which latter function, however, he could delegate to another. He seems to have been the chief sacrificer also, (corresponding to the yajamāna of our Vedas), which involved his personal attendance at the national festivals of the gods and at the various cult centres. In Khēta, the queen occupied an important place in the realm, and occasionally participated in the acts of government. For instance, Queen Puduhepe (Padmasēva), wife of Hattusilis III, even put her own official seals on state documents and conducted an independent correspondence with the queen of Egypt. So long as the queen mother was alive, even the reigning queen was known only as "Towananna" (as construed by Gurney), a word which is obviously a corruption of Sanskrit* "Tanayā (nana)", i.e., daughter (or daughter-in-law) of the queen mother. The ruler's kinsmen, known as the Great Family (the mahājāti of Pānini), naturally commanded great influence, as they held almost all the important posts at court and in the administration, like the chief of the bodyguard, chief cup-bearer, chief treasurer, sceptre-bearer, chamberlain, leader of the one thousand (sahasrapati) etc., all

* Literally 'daughter's face.'

of which show that there was a settled court-etiquette and a well-organised regal household, on the model prevalent in India of those times. The chief nobles furnished the army leaders and the chariot-warriors. Of the common people (corresponding to the Vis, of India), there are not many details. They were apparently divided into three broad categories, viz., the peasant cultivators, (Krishaks in Sanskrit), artisans of all types (Silpas), and the traders (Vanij). These were all free men, but liable for some sort of military service. As regards the servant classes (bhrityas or bondmen), it would appear that their living conditions were severe on paper, but tempered, in practice, with a lot of humanity and goodwill. The legal code, as applied to torts and crimes committed by servants, looks curiously like what is prescribed in the Manusmriti. The Khēta code prescribes that the life and body of the bondmen should be protected, with compensation value, however, at half of that of free-men. If these bondmen committed injury to life or property, the penalty against them or their masters was also halved, as in our Smrithis. Thus, the servants had both rights and duties and were free to possess property. It is obvious that, as in India, there was no real slavery in Khēta, in the technical sense of the term. There were bondmen, who were either prisoners of war or those under duress for debt or fine, or who surrendered voluntarily their freedom for maintenance and protection, in times of economic distress or physical danger.

The administration of this considerable empire was ordered on a personal basis, the king himself holding the reins of government at the centre, while the provinces were under the supervision of viceroys, who were often from the Great Family. Kingdoms which had placed themselves under Khēta protection were allowed self-rule on mere trust, but after a severe oath of loyalty in the name of the gods; (the Khētas abhorred the idea of taking hostages). But the vassal kings were expected, once a year, to appear at the imperial court and tender tribute in person. They were forbidden to have any foreign relations and were expected to augment the Khēta army, when emergency demanded. All state treaties were inscribed on metal plates (gold, silver or copper) and the originals were kept in temples, with copies on clay tablets, in the respective chancelleries.

The Khēta kings were surrounded by powerful neighbours, like Egypt, (called Misri or Misra in Khēta), Akkadian Babylon (called Kar - Dumia*) and Hurri - Mittani, (Sūrya - Mitrāni) another ancient Hindu state in the south, of whom more anon. § The Khēta archives show an admirable spirit of friendly intercourse, based on a balance of power between the four great kings, who were apparently on excellent terms, mutually. They addressed each other as brothers and cemented their friendship with diplomatic marriages and costly gifts. (When Mittani independence was ended by Suppiluliumas, this concert of powers was reduced to three participants). On occasions when the kings made treaties, they were recorded in both the languages concerned, as for example that of Ramesses, the Great, and Sathvasila III (1270 B.C.). The treaties were framed on the basis of absolute equality, with elaborate assurances of friendship on either side and a promise of help to ensure legitimate dynastic succession in either kingdom. The extradition of fugitives was on a strictly reciprocal basis, and this principle was seemingly also observed, in the treatment of subject states asking for protection, as the following extracts from the treaty, between Suppiluliumas and the king of Kizzuwatana, would indicate.

"The people of Isuwa", (says Suppiluliumas), "fled before My Majesty and descended to the Hurrian country. I, the Sun, sent word to the Hurrian: 'Return my subjects to me'. But the Hurrian sent word back to My Majesty as follows: 'No! Those citizens had previously.....come to the Hurri country and had settled there. It is true they later went back to the Land of Hatti as fugitives; but now, finally, the cattle have chosen their stable, they have definitely come to my country'. So the Hurrian did not extradite my subjects to me.....And I, the Sun, sent word to

* Skt: Kardhama : slimy, muddy, water-logged, an apt description of the Euphrates basin!

§ "It was a dynamic cultural life that flourished in the Hittite though it was cultivated by the never numerous Indo-European or Mesian population. It is a great pity that the invasion of the Aegean peoples (i.e., Phrygians) made a premature end to the cultural endeavour and the very existence of this gifted people." (Hrozný, The Ancient History etc., P. 136).

the Hurrian as follows :— 'If some country seceded from you and went to the Hurrian as over to the Land of Khatti, how would that be?' The Hurrian sent word to me as follows : 'Exactly the same'. Now the people of Kizzuwatana are Hittite cattle and have chosen their stable; they have deserted the Hurrian and gone over to My Majesty.....the land of Kizzuwatana rejoices very much over its liberation."

This document reveals the existence of a sort of international public opinion, (which apparently controlled the behaviour of kings over 3000 years ago in this remote corner of the Asiatic continent), as well as the adherence of these Aryan kings, to a code of conduct, consistent with Dhārmic ideals of state-craft.

The Khēta realm, (appropriately called Kat-Patuka), was mostly mountainous country, snow-bound in winter but scorched by a relentless sun in summer. The land must have been well-wooded in the past, with wild beasts, (elephants and lions among them, as mentioned in Egyptian texts), roaming about in the rain-fed forests. The plains were well cultivated, as attested by the Khēta law code, with its elaborate provisions about land compensation and its lists of fields, and the title-deeds of the bigger estates. The principal food crops were barley and wheat, (yava and gūdhum,)* which were probably introduced from India where they were the favourite grains of the Rig Vedic peoples. The kingdom was rich in minerals, and copper mines seem to have been worked at several places. But its historical fame rests on the highly successful ferrous industry in which it specialised. Classical tradition is strong that iron-working in the Near East originated somewhere in the Khēta kingdom, probably in the Black-Sea area and that from there it went northward and westward into Europe. As Woolley remarks, the setting up of the "steeling" process is most likely to have been made in the Caucasian area, where iron ore was mined and the crude metal (pig iron) was produced in quantity. It is a fact that for three or more centuries after 1700 B.C., the Khētas controlled the steel

* Spelt wheat has been found in Indus Valley excavations, as well as barley.

trade and were the only people from whom even the Pharaohs of Egypt could obtain ferrous metal, and that too, in niggardly rations. The Khēta monopoly was in due course broken (Europe started the Iron Age about 1000 B.C.), but as long as it lasted, it gave a tremendous commercial advantage and political bargaining power, to these Aryan kings. It is true that iron ore was abundant all over the Anatolian hills, but the technique of iron smelting under the required high temperature, was not widely understood, and the secret lay for quite a time with the Khētas. Even inside the empire, iron continued to be rare, though swords, writing tables, jewels, and even statues of gods made of iron are mentioned in the royal texts, which indicate that these were treated as valuable and special articles, intended as royal gifts.* When the king of Assyria asked for some good iron from king Hattusilis III, the latter wrote to say that "good iron is not available in my seal** house in Kizzu-watana...this is a bad time for producing iron.....to-day I am despatching an iron dagger blade to you". This passage clearly shows how valuable the metal was and how much in short supply; it will be safe to assume that it was more precious than silver or even gold, to the weapon-hungry nations of that age.

Where from did the Khētas get this sophisticated knowledge of the ferrous industry? In Rig Vedic hymns, there is a clear mention of steel. Iron (ayas, from which even the word "iron" is derived)*** is described in the Samhitās as both malleable and ductile, tough and strong. Steel is also referred to as "tikṣma-dhātu" in subsequent literature, because of its sharp and penetrating quality. From all available data, it is certain that the Vedic Aryans knew how to make swords, armour etc., of steel, about 4000 B.C. In Vedic India, the cuirass (varman) was lined with steel, over a skin base. The helmet and the hand-guard were also of the same metal, but in the case of nobility, they might have been gilt with gold. The spears, javelins and the

* King Anittas mentions the receipt of such gifts from the Gramani of Puruskanda. See also *The Ancient World*, Vol. I, Pp. 122/123.

** Royal store.

*** Old English 'ysen'; German 'eisen'; Middle English *ysen* and *wren*=iron.

swords were all made of the best steel. The very name "asi" for the sword is derived from "ayasi" i.e., "made of steel".* It is clear, therefore, that the Khētas must have learnt their art in Sapta Sindhu and carried it into Anatolia, as early as 1700 B.C. I had mentioned that there was a Khēta province, called "Asi", situated just south of the Black Sea; the name is, probably, based on 'Ayassi', i.e., the land of the iron trade. Naturally, production in the new territories must have been very limited for want of skilled workmen and necessary "steeling" facilities, thus making 'ayas' a commodity more precious than the so-called precious metals of that age.**

In Khēta, the medium of exchange was the silver shekel cut in small bars or rings and measured by weight.*** This silver coin was so named because, it was a fragment or a bit of silver, forming part of the standard weight (the mina, Sanskrit māna) which was roughly 300 grammes. 60 shekels made one mina, so that a shekel weighed roughly 5 grammes. The Khēta law code contains lists of prices, which constitute very interesting reading. A cow was worth 7 shekels (i.e., 35 grammes of silver), and a draught horse, double as much. A riding horse would fetch 20 shekels, but a mule was rated at a full mina i.e., 60 shekels, thus showing the extreme rarity of an animal, which had neither pride of ancestry nor hope of posterity. § As regards grain, the price of

* The Rig Veda refers to iron forts. Curiously, the Vajasaneyi Samhita (V(8)) mentions the siege of three castles made of iron, silver and gold respectively. Apastamba (XI, 4(8)) explains these mantras as implying that if the king's castle is attacked, propitiatory offerings of iron, silver and gold pieces should be made at the Soma sacrifice.

** Students of history might recall that when aluminium was first manufactured in Europe in the 19th century, it was considered to be more precious than gold and Napoleon had a special dinner service made of this light metal, which he always kept under heavy guard.

*** "Sakala" in Sanskrit, means a piece, a bit, or fragment. The science of minerology and coinage was also called Sakala.

§ The mule was well-known in Vedic India, and was specially reared for use in hilly terrain. The Sri Suktha mentions the mule chariot (asvathari ratham) as a very valuable commodity, bestowed by the kind Goddeś, on her devotees.

one "iparisu" of wheat was $\frac{1}{2}$ shekel and the same measure of barley $\frac{1}{2}$ shekel, and of wine $\frac{1}{2}$ shekel. (In Sanskrit, *pātra* or *prastha* is a measure, probably, a heaped measure, from *Parichith* = to heap up). One 'zipittani' (Kshiprathani? Kshipra = 4 inches) of butter would cost 1 shekel, (and of lard also, the same price!). Land prices were phenomenally low; for instance, 1 acre of 'sisar' land (probably, *ushar* = saline earth) would cost only 2 shekels and 1 acre of 'halani'* land, 2 shekels. One acre of vineyard would cost 2 minas or 120 shekels. Basic intoxicants apparently commanded a high price in Khēta. Cloth was also comparatively costly; a fine garment (made of silk and lace) would be worth 30 shekels or the value 15 acres of land! A blue gown (dyed, probably, with the famous Indian *nili* or indigo) would cost 50 shekels. It would appear that international trade, particularly with Egypt and Assyria, was brisk and profitable.

A word about the famous Khēta law code, (already referred to), will be, doubtless, of interest.** At Boghaz-keui were found numerous tablets containing a good part of the legal enactments of the Khēta kingdom, dealing not only with crimes and penalties but such matters as sanitation, escape of bondmen, land-dues and land-tenure, rates of pay and service dues, caveats against infringements of religion, lists of prices, compensations for various claims, and fees for training apprentices. It is surmised that, part of the code is missing but there is no doubt that it was based on authentic practice, looking to the precedents cited and the pragmatic approach to letting-in evidence, assessing damage, etc. As in India, disputes of all types would come first before the council of elders,*** who formed a sort of local government in cities, but as their powers were limited, the matter in really important cases,

* Incidentally, Gurney is unable to find the meaning of 'halani.' This word is derived from 'hala' or plough, and 'halani' means, in Sanskrit, (land) fit for the plough.

** Hrozny praises the "spirit of order and orderliness which is characteristic of the Hittite Law Code and the State contracts. In this respect, the Hittites are the very type of the early Romans."—(Anc. Hist. etc., P. 148).

*** c/f. the Panchayat of Panini.

the Hittites "had evolved a system, progressively more and more conscious of individual rights and interests, and approaching, in spirit, the ideals of modern legislation. Not only through the Syrio-Hittite centres and the civilisation of Hattusas, but also through the Achæan (i.e., Greek) people, with whom Hittites had long been in touch, there may have been handed down to after-ages, something of the liberal conception of law, which we see in the Code. They preserved that balance between the rights of the individual and his duties to the State, which gives to that Legal Code something of the character of democratic law". This liberal spirit even permeated International relations. For example, in his treaty with Ramesses the Great, the Khêta king says,* "If a man flees from Egypt and comes to the Mahārāja of the Khattis, the Mahārāja shall seize him and hand him back to Ramesses, the great ruler of Misra. As regards this man, who is handed back, his fault shall not be brought against him by the Pharaoh; his house, his women-folk and children shall not be punished. He shall not be killed or any charge preferred against him". On his part, the Khêta monarch undertook to observe the same rule against his own run-away citizens, rendition by the Pharaoh. The Vedic concept of "Rta", (that stern Moral Order, so dear to the heart of our venerable seers), was apparently much in vogue, in this remote corner of Asia, 3500 years ago!

The family life in Khêta was the same as in Vedic India: it was patrilinear and patriarchal and the pater-familias had considerable power over his household. The father "gave away" his daughter in marriage (kanyādāna) and the bridegroom then assumed power over his wife. The bridegroom made a token gift to the bride's father, which was called 'kusatha', (probably, from 'kus' to embrace or surround). The bride received a dowry from her father, which was called in Khêta language, iwaru (Sanskrit: iwaru = harmful, pernicious); probably, this stridhanam was so described, in contumely, as no respectable suitor would ask for one **. There was strict prohibition of marriage among

* In the Kheta version.

** Alternatively, 'iwaru' may be the same as Skt: urwara i.e., a plough land. In the Rig Veda, Apala refers to the urwara given to her by her father (R. V. VIII, 91-5).

close relatives, as in India.* Apparently levirate** marriages, e.g., a man marrying his deceased elder brother's childless widow, were recognised, (as is frequently instanced in the Bible); or this might be the Khēta version of 'niyōga', which was in vogue in Āryāvarta, from very ancient times, although severely frowned upon by the leading Sūtra writers, like Āpastamba and Manu.

The land tenure in Khēta presents certain features parallel with ours. Land was held in fief under title from the king, (presumably entailed, as in India, from father to son); failing all heirs, such land reverted to the sovereign, as visualised in our sāstras. The second tenure was that of the 'man of the tool', i.e., the tenancy by an artisan or a cultivator, who was liable for labour service, but who held the land in heredity. (The temples had vast estates, which were let out to tenants who thus paid rent in kind or by service).

The army, the defences and the methods of war of the Khēta kings, would require a small monograph, for adequate treatment. The briefest of summaries may, however, be attempted, emphasising Indian parallels, where necessary. The Khēta army mainly consisted of chariots and archers. There is no reference to cavalry or to elephantry and foot-soldiers; appear to have played a minor role in warfare, although mention is often made of 'sūtas'. (Sanskrit: sūta = charioteer). In the use of chariots, with spoked wheels and drawn by horses, the Khētas broke an entirely new ground in the Near East. The Assyrian warriors, it is true, used vehicles in war but these had solid wheels (of the type occasionally seen even now in north India) and were drawn by onagers or asses. The light equine chariot is

* King Suppiluliumas wrote to the Prince of Hayasha as below: "In the land of Hatti, there is a valid rule, 'A brother should not take to wife a sister or cousin. He who does so, shall die'. But yours is a barbarian country; it is customary there for a brother to marry a sister or cousin. If your sister or cousin ever happens to visit you, give her meat and drink. But do not dare to lie with her; capital punishment would follow. You shall also keep away from any maid of honour"—[The Prince of Hayasha was the husband of the Kheta King's sister.]

** Latin levire = brother-in-law; Sanskrit: devru.

an Aryan military device and came to Katpatuka *via* the Kassite kingdom of the River Valley, (which I shall describe presently), which also introduced it into Egypt, where wheeled vehicles were unknown till the 18th dynasty (1600 B. C.). The Khēta tablets recite the instructions, laid down by one Kikuli, a subject of the neighbouring kingdom of Mittani, on the training and acclimatization of chariot-horses. To quote Dr. Gurney, "In this work are found certain technical terms, in a language akin to Sanskrit. We know from other texts, that the rulers of Mittani worshipped Indo-Aryan deities, and their personal names betray a similar origin. Hence, we must conclude that this Aryan clan (i.e., Mittanis), moving *westwards*, brought with them their special knowledge of horse-breeding, and that it was from them that the art was learnt by the peoples of Western Asia. It is significant that the names of Indian deities are found to form an element in the names of Kassite rulers of Babylonia also."

The above quotation is of crucial importance to my thesis, coming as it does from an eminent authority on the ancient history of the Near East. Gurney concedes that, round about 1500 B. C., the Mittani rulers were instrumental in propagating the science of cavalry training and chariotry in the Near East, *having learnt the science in the East*, (which can only be Sapta Sindhu in my opinion.) The consequences, which follow from this observation of Dr. Gurney, are that the science of equine military tactics was originally well-established in India, (thanks to the Indo-Aryans having domesticated the horse much earlier), that there were migrations of Aryan peoples west-ward from Sapta Sindhu to the Middle and Near East, and that some of these advancing Aryan communities had, with conspicuous political success, set up Hindu kingdoms in the Fertile Crescent, where they propagated the use of the horse and the chariot, both among themselves and their neighbours. Gurney seems thus to give the quietus to the theory in hot favour with certain writers, viz., that the Aryans were natives of the Caucasian steppes and that they were in a semi-barbarous condition when they *entered India* (through the Khyber Pass?) about 1500 B.C. etc. etc.

To resume: In Gurney's opinion, the Khēta two-wheeled chariots were second to none in speed and efficiency. The wheels

were six-spoked and the chariot had a crew of three, whose weapons of attack were the lance and the bow. The defence was in the form of shields which were either rectangular, or like a double axe. There were some sort of pioneers and sappers for constructing (or under-mining) fortifications. Bullocks, pack-asses and mules were also used, as in India, for moving the commissariat. There is no evidence of a Khēta fleet, although they controlled an extensive coastline and some Hellenic islands, including Cyprus (Alasia). The warriors, (as seen in Khēta statuary) wore a sort of belted kilt and a helmet with ear-pieces and neck-guard, and carried a short curved sword and an axe, shaped like a human hand.* The active campaign was limited to the spring and the summer. According to Gurney, the Khēta kings were masters of strategy and tactics, the aim being to catch the enemy in the open and then throw against him the irresistible horse chariots and the fierce bow-men. The famous battle of Kadesh, (Kāshṭa Dēsa - forest country), where the honours were evenly drawn between Khēta and Egypt, is strong evidence of Khēta valour and skill, under conditions of numerical inferiority. Their siege-craft must have been considerable, as evidenced by the reduction, by their assault troops, of Carchemesh - a really strong fortress. Their own strongholds were constructed on the Indian principles, with the main wall consisting of an inner and an outer-shell of rough hewn stone filled, in-between, with rubble. There was an outer screen wall of smaller size, about 20 feet away from the main wall and the fortress was equipped with a secret tunnel, for surprise sorties and for escape in dire necessity, as laid down in our ancient treatises. War was apparently carried on under humane impulses. Ample notice was given to the enemy, before hostile operations were commenced and a valid excuse was always sought for. In case of surrender, the enemy was treated with fairness and consideration**.

* Like Indra's 'Vajradanda.' Hrozný calls this implement a 'double-faced axe.'

** For e.g., it is mentioned in a royal proclamation of Hattusilis II, that the surrender of Manava Datta of the Snehā River District, was accepted at the prayer of his mother, although he had been repeatedly guilty of marked treachery.

Turning to the language and the script of the Khētas,* it would appear, that they used mainly two tongues in their official correspondence, the Khēta and the Akkadian (the latter, a Semitic language, hailing from Babylon); but occasionally, they resorted to Hurrian (i.e., Sūryan), which was nearer Sanskrit than even Khēta. The great archaeologist, Hrozny, had suggested, as early as 1915, that Khēta was an Indo-Aryan language and he has now been proved correct. The language was inflective, like Sanskrit, with six case-endings for nouns. There were only two genders, unlike Sanskrit, and there was no dual. In the case of verbs, the resemblance to Greek and Sanskrit was striking. Gurney quotes a number of words, to show the close similarity between Greek and Khēta. Since Max Muller and others have found Greek to bear intimate affinity to Sanskrit, the inference is obvious; it could only mean that Khēta is derived, ultimately, from Sanskrit, and that Greek itself owes much to Khēta, as I shall explain presently. Some examples of Khēta words, with Sanskrit derivage as suggested by me, will be apposite.

<i>Sanskrit</i>	<i>Khēta</i>	<i>Greek or Latin</i>	<i>English</i>
Paruhu	Pahhur	Pyr	Pyre (Fire)
Śwāna	Suvanai	—	dog
Lahara	Lahhu	Lavit	lave
Asti	Hasti	Osteo	osteo (bone)
Hanti	hanti	anti-	anti-
Jānu	Jenu	Jenu	knee
Vāja	Wāda	Watar	water
	(also wader)		

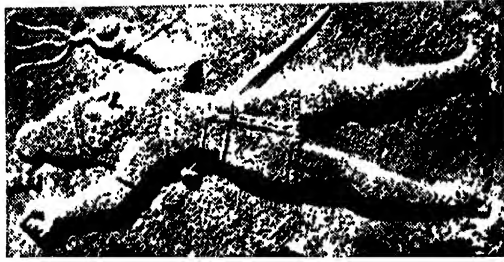
* Hittite script had about 220 signs, some of them ideograms, others phonetic, and a number being syllabic. They were cut from right to left and were boustro-phedan. "The script does not seem to have been derived either from Egyptian hieroglyphs or from Minoan pictograms." (The Ancient World, I, P. 89). Hrozny thinks that Hittite belongs "to the earliest Indo-European languages. It seems to have separated from the rest of the Indo-European family at an early stage."—Ancient History etc; P. 107.

<i>Sanskrit</i>	<i>Khēta</i>	<i>Greek or Latin</i>	<i>English</i>
Āpa	Akka	Aqua	aqueous
Kūpa	Kupa (sh)-	—	ditch ; well ; grave.
Kwo	Kwi	quis	who
Swaswar	Sesurar		sleep
Sasti*	Sezee		sleeps
Sta-	Esta		stand-
Krūra	Kurur		inimical
Īsvara ; Īsa	Ishas		Lord
Takshan	Taksan		carpenter ; joining
Rkwan	Arkwan		prayer ; praying
Ghnanti	Kunanzi		they slay
Padam	Pedam		step
Asnas	Esnas		blood
Asvāya-	Akuvaya-		on horse - back
Nabha	Nabhis		sky
Hēmanta	gimmant		winter
Vasu	Asu		goods, property
Vastra	Vashuva		clothing
Dirga	daluga		long
Mahi	Meki		great
Su	Asu		good
Nāman	laman		name
Pātra	Pater-		wing

* (सस्ति) from sas = to sleep.

<i>Sanskrit</i>	<i>Khēta</i>	<i>Greek or Latin</i>	<i>English</i>
Ēka	eika		one
Ka-s	Kwis		whose
Asmi	eshmi-		I am
Astu	Estu		let him be
Dwi	Dwi		two
Asnāte	Azanati (also adananzi)		he eats

This list could be indefinitely lengthened but for two factors. Gurney has presented, in his learned monograph, only limited verbal parallels between Khēta and Greek (& Latin), presumably because, he thought he had made out enough of a case to show the close relationship of Greek to Khēta and because he did not have the knowledge or inclination, to go backward to the ancient mother source of Aryan dialects, viz., Sanskrit. The second reason lies in the methods of writing, adopted by the Khētas. The cuneiform characters, (which they borrowed from Babylon), are syllabaries, well suited to a Semitic tongue which as I have already mentioned, exhibits only consonants, leaving it to the reader, to supply the vowels, as per the context. To give a current instance, in Hebraic (and Arabic), k. t. b. may be read as kitab (a book), aktib (I write), katab (to write), maktab (writing room), etc. Unfortunately, the Khēta language (with a Prakrit base), did not lend itself readily to this abstract writing and the Khētas had to use the syllabaries as if they were (silent) consonants. Another complicity was, that the soft consonants, so inevitable in a Sanskrit-derived tongue, (d, g, b, h etc.), were symbolised in Khēta, not by the equivalent Akkadian syllabary, but by the convention of writing them twice over (dd, hh, gg etc.). A still further difficulty arose from the habit, in Khēta, of interspersing Akkadian syllabaries in Khēta texts, as a sort of short hand. These syllables were not intended to be pronounced in Akkadian, but the reader was expected to substitute the



NO FACE PAGE 183.

Stele at Boghaz-Keui Showing Respectively (1) The Presiding Genius (Rudra);
and The Weather God (Indra) Note the Trisula in the hand of
the presiding Genius.

corresponding Khēta words, while scanning the texts!* Mention must be made, at this stage, of a classical language, (called by Gurney 'Hattian'), which was used by the priests in the sacrifices and in worship. They were brief utterances, of either invocation or praise, and usually consisted of a string of the names of the Gods** with an extensive use of prefixes. These passages are, invariably, introduced in the tablets by the pictograph, read as 'Hattili' by Gurney, but whose meaning evades the archaeologist, however. I suggest it is Hattiri, or more properly Khattiri, i.e., the Kshatriya or Prakrit language, which was originally spoken by the Aryan priests, when they moved into Anatolia. It need not be emphasised, that this priestly tongue must have borne a very close resemblance to pure Sanskrit, as further reasearch will, no doubt, confirm.

A look at the religion of the Khētas is inevitable, and it is eminently instructive. There was, during the period of the empire, a state cult, but each city or province had its own gods and goddesses and their appropriate ceremonials. But not much is known of these, except through relief carvings or other weather-worn monuments *in situ*. The rock carvings at Yazilikaya, very near Boghaz-keui, are a veritable treasure of information on the national religions and practices, but unfortunately, all the figures in the sculptuary have not yet been identified and their interpretation is, often, a matter of dispute.

In the Khēta pantheon, the so-called Weather God seemed to be supreme, in the opinion of Gurney. This God wields an axe with a head like a human hand, and his symbol is a flash of lightning. He drives a primitive kind of chariot over the heads of personified mountains, "The bull is his sacred animal and may (even) stand alone, as his cult symbol", says the learned historian : or, "he may stand on the bull † (and this pose became

* Just as we read i.e. and e.g. in English as 'that is' and 'for example', and not as per the original Latin words, *id est* and *exempli gratia*.

** Such 'strings of names' for deities are, doubtless, the *Sahasranamas*, so familiar to Hindus.

† a cow, for obvious physiognomical reasons.

well-known throughout the Roman empire as Jupiter Dolichemus)". In Khēta myths, the "Weather God" figures as the slayer of a serpent, called Ilyjankas in the local idiom.

In reality, (as our Vedic lore amply bears out), the Weather God of the Khētas is none but the mighty Indra, the Lord of the clouds, rain, thunder and lightning. In our texts, he is stated to be of a ruddy or golden colour, and to carry in his hand the famous vajra danda or thunder-bolt, which is shaped like an axe but with a human fist at one end (vajra mushti). He rides in a golden chariot, drawn by two tawny horses, (and not bulls, as thought by Gurney); and he wages a constant war against the evil serpentine powers like Ahi, Vrittra, Sambara and Namuchi. He is, *par excellence*, the lord of the atmosphere and he dictates the weather, assisted by the Maruts or the Storm-gods. Besides the thunder bolt, he carries a *large hook and a net* (Indrajāla), which also figure prominently, in Khēta monuments. He cuts off the wings of the roaming mountains, making them 'achala'. In our myths, his wife Indrāni, is the daughter of the Asura king Pulōman, (apparently a recusant Aryan). The Weather-God is also called Indra-Rishaba, in his role of a bull, when he impregnates the earth, personified as a cow; (he fertilises the earth by sending timely rains). In our legends, he conquers a demon called 'Illyvisha' which phrase bears the same connotation as Ilyjankas' of the Khēta texts. (Janga or Jangala means poison, in Sanskrit),

It will be appreciated that the Khēta Weather God is a very close copy of the Vedic Indra, and there can be little doubt about the identification. In the bas-reliefs at Malatya, Indra is sculptured as killing, with his fist shaped axe, a huge serpent, which is writhing in pain and belching fire. In Khēta myths, the Weather God is described as being initially worsted by the dragon (or serpent), but as finally overcoming the enemy, by resorting to amoral tricks and ruses, with the help of the goddess, spelt by Gurney as Inarā, but who is doubtless the same as our Indrā (or Indrāni, wife of Indra). This portraiture of the supreme national god shows marked similitude to the somewhat dubious image of Indra, built up in later Vedic literature, by our ancient bards.

To quote H.R. Hall,* "The Hittite deities are often accompanied by animals, in quite Indian fashion. It may be, that it is a feature borrowed from the Aryan religion." Hall would have perhaps been more factual, if he had said that the religion and the iconography had been brought into Anatolia by a branch of the Aryan race, instead of being merely borrowed, at second-hand.

Other gods, too, figure in the local cults of the empire, but it will be somewhat tedious to enumerate all of them, and fix their identity in terms of the Indo-Aryan pantheon.** Some of these deities were borrowed from the Hurrians (Sūryans), and some from Babylon. In the city of Tuwanuwa, Indra was venerated, under a different name, (which is not deciphered), but his consort appears under various names such as Sahassaras (Sahasrā) Huwasśanis (Suvāsini) and Tasimis (Dasamā). Another Khēta god was called Wurun Katti, (King of the Land), equated by the archaeologists with the Sumerian Zababa, (Hebrew: Jehevah or Jehovah?). The Sanskrit equivalent is apparently Varuna-Kshētri (Lord of the Region).***

Gurney's remarks, about the Sun-God, (Sanskrit: Savitār) are quite interesting. I quote: "Why is the Sun-God said to rise in the east from the sea? It has been suggested, that this Hittite Sun-God was not indigenous to Anatolia but was brought there, *by a people dwelling on eastern littoral*.† It is indeed a curious detail, that one text describes the Sun-God, as having fishes on his head and there is a distinct type of Sun-God, known as the 'Sun-God in the Water'. There was also a Sun-God of the Under-World, through which the Sun was supposed to pass on its way from the west to the east, during the hours of darkness".

* "Ancient History of the Near East," P. 600.

** Hrozný equates the Hittite Inara with Vedic Indra.

*** The sun-goddess was called Arinna; this is perhaps, Skt: Aruna or sun-goddess.

† Italics mine.

These words of Gurney are instinct with suggestion. I have, elsewhere in these writings, dealt with the concept of the Sun as "Asūrya", i.e., non-Sun,* when he was supposed to go into the lower regions, at night. I have also referred to the popular conception in our Vedic literature, of the Sun rising *from the sea, in the east*. The reference, in Khēta records, to the Sun rising from the Eastern Sea seems to confirm the assumption, that the idea was taken over from Āryāvarta, where the Eastern Sea was often cited as the diurnal abode of Sūrya. It may be added, that the Khēta kings were specially addicted to Sun worship, since they apparently claimed descent from the Solar deity, as would be implied by their seals, which exhibit the conventional Sun motif (a bright disc, flanked by spreading wings), always hoisted over the head of the king.

While commenting on one of the well-known steles near Boghaz-keui,** Gurney has observed thus: "The leading goddess of the pantheon bears the name Hepatu, written, clearly, in hieroglyphic script; the smaller statue of her son, who stands behind her, (in the stele), is designated Sharma, (or Sharumma). The symbol borne by the Weather God opposite to her, is no longer identifiable but, in view of the Hurrian name of his consort, we may be sure he was intended to be known as Teshub.† He is represented as a bearded man, carrying in his right hand a club, his feet resting on the bowed neck of two figures, representing mountains. The bull-drawn chariot is missing, but the carving shows two bulls, called Seri (or Serisu) and Tella (in the script). The mountains are named Namni and Hazzi. In the Hurrian language, Seri and Tella mean Day and Night.‡ Hazzi is mons Casius, near Antioch in North Syria."

* The Egyptian Osiris.

** Which has been reproduced by me, vide plate attached.

† Deva Simha, a name of Siva?

‡ Serisu and Tella are probably Skt. Siras and Thala, head and foot (of the day). Namni and Hazzi can be equated with Namana (bending in veneration) and Hasthina (folding the hands together). These words suit the posture assumed by the two figures under the feet of Rudra, or the Presiding Deity.



O FACE PAGE 186.

THE WELL-KNOWN STELE AT BOGHAZ-KEUI DEPICTING THE
MARRIAGE SCENE BETWEEN RUDRA AND PARVATI.

With due deference to Dr. Gurney's interpretation, a close study of this sculpture-in-relief reveals that, while Indra, with his net, hook, sword and vajradanda, stands behind, on two truncated mountain tops, thus symbolising his vanquishment of the flying hills, with a person bearing the sacred Sōma plant following him, the bearded figure mentioned by Gurney is *not* the Weather God, but Rudra or Siva, with a danda in his left hand and the Pināka in his right, and followed by Nandin, the bull, at his heels. The female deity opposite is, doubtless, the famous Lady of the Mountain, or Pārvatī, carrying a lotus in her hand, and riding a lion in token of her having overcome the buffalo-demon, Mahishāsura. She is followed by her adopted son, Kārthikēya, appropriately mounted on a dog. This young god is also known as Sarajanman* in our myths; (i.e. 'born among reeds', Siva having cast his seed among the reeds of the Gangā). Without doubt, the Sharumma or Sharma, mentioned by Gurney, is Vedic Sarajanman or Kārthikēya who, in this stele, is carrying in his hand an owl, as symbolised in our Purānas.** The name of Pārvatī, alleged to be glyphed as Hepatu by Gurney, is to be equated with Hēmā or Hēmavati, in my opinion.

The Khēta temples were, apparently, built on principles known to our text-book writers. Gurney mentions that when one entered the courtyard, he had necessarily to turn left to reach the *sanctum sanctorum* (pradakshina mārṅa). The deity was so located that the morning sun fell on it through high windows (Īsānya position). Facing him was an altar or pedestal, glyphed in Khēta as "Istanana" (Sanskrit: "Īsa stāna"). It was the duty of the priests to attend daily to the "bodily needs" of the deity, (washing, clothing, providing food and drink, and entertaining it with music and dancing.). A tablet has been located which lays down the 'pujāri code' of Khēta. I quote: "The ministrants must be perfectly clean and ritually pure. If they have come into contact with any form of pollution, or if they have slept with a woman, they must not

* Also called Sarambava and Saravanabhava.

** Uluka in Sanskrit means both owl and reed.

approach the god, until after necessary rites of purification. Every priest has to return to the temple at night, though he may spend the evening in town".* Propitiatory offerings, of all kinds, were made to the gods, including a few animal sacrifices. Eighteen annual festivals are mentioned, (some named after the seasons of the year). An important one was called 'purulliya'** dedicated to goddess, Lilwani, (Lilāvati, Pārvatī). The tablets contain a reference to a plant used in the sacrifices, which Gurney reads as Andahsum, and which, he thinks, was an edible plant growing in spring time. In the Vedas, the Sōma sacrifice for 'Rājyakāma' and 'Pasukāma', (for winning territories or wealth) is called 'Anthavasū'. It is probable, that the Khēta Andahsum refers to the Sōma plant, which apparently grew in those days in the Anatolian mountains also, and was used, on necessary occasions, in the regulation manner.

Certain musical instruments are mentioned in the ritual tablets, named arkammi,** huhupal, and galgalturi. I am unable to identify the first, but the second must be some kind of a big trumpet, since 'hum', and 'humkāra', in Sanskrit, mean a loud shout or a roar like thunder. The last instrument is, probably, a double pipe, since in Sanskrit, 'gala' means a musical instrument of this type. A person, blowing a double pipe, with a group of dancers, one of them carrying a tabala, and another a lute, is carved on a monument at Boghaz-keui. ‡

About the magical rites and the art of divination, much can be written, to demonstrate the large debt of the Khētas to

* Another regulation reads: "Show sacred awe toward the bread and the sacrificial vessels. The room (for cooking) should be well-swept and sprinkled. No hog or dog must pass its threshold. You should be clean and wear clean clothes; likewise, your hair and nails should be clean."

** Students of Sanskrit may remember that 'puru' implies an act of worship, or the offering of a ritual sacrifice. The leaders of these rites are called Purumilhas (Rig Veda, IV, 44(6)).

*** Arkammi may be perhaps Skt: Kaskari=lute; this instrument is featured in the panels at Boghaz-keui.

‡ Curiously, the pan-pipe was a familiar musical instrument in Inca's Peru.

Sapta Sindhu. Augury, through the flights of birds, (*sakuna*), is, obviously, of Indian origin, but the same cannot be said of gauging the future through an examination of the entrails of sacrificial animals, but such a practice was common in other Aryan communities, as e.g., in Polynesia and in the New World. The ritual of cursing an enemy, by making images of him and then destroying them with appropriate magical formula, was not unknown to our ancestors, and could be traced to the Atharva Veda. A god, to whom special prayers were addressed, with some mumbo-jumbo of the type sanctified in our mantra sāstras, was "Jarris", the lord of pestilence; (Sanskrit "Jarā", considered by our seers to be a potently evil spirit).*

A look at the funeral ceremonies of Khēta, will reinforce the suggestion that these were borrowed from across the Hindu-Kush. The death ceremonial lasted 13 days, (as even now, among orthodox Hindus), but the dead body was cremated the same day, or the next. On the second day, the bones were collected, the fire being extinguished through libations of wine etc., over the funeral pyre (as was customary with our Rājanyas)** and tied in fine linen cloth after being immersed in oil and, ultimately buried in pots, in the earth. In the case of the poorer classes, it would appear that inhumation was practised, (as in Āryāvarta). In either case, the funeral rite was rounded off by a big communal feast, (which is, sadly, still a post-funeral 'must' in our country). According to Gurney, the

* Thus Hrozný (*Ancient History etc.*, P. 149/151). "Always thorough and systematic, the Hittites made use of all the three forms of divination (i.e., flight of birds, condition of sacrificial entrails and the prophecies of 'old women'). In the Boghaz-keui records, there are many rituals against maladies, epidemics, famine, evil spirits and domestic dissensions. It is interesting to note, that the names of the priests and priestesses, who had written the rituals are often attached. It proves the value of personality". [In my suggestion, this denotes the copying of the Atharva Veda, by the Kheta scribes. The reader will, doubtless, be familiar with the fact that all Vedic songs are preceded by a brief recitation, containing the name of the priest (or rishi) the metre, etc.]

** Our texts mention that in the case of a Brahmin, the smouldering fire should be extinguished by a mixture of milk and water; in the case of a kshattriya, madhu and water.

death ceremonies, of both the Greeks and the Trojans, as described in the *Illiad*, was almost exactly similar to those practised in Khēta several centuries earlier, the only difference being the absence of 'mantras' etc., in the case of the Yavanas. Gurney, in this context, makes this pertinent observation, which I find to be highly interesting; "It does not seem likely, that the Hittite royal family would have suddenly adopted the practice of cremation, unless they had at least some contact with a people, who had already been cremating their dead and it may be worthwhile to consider, how this could have occurred". Gurney does consider the point and, most curiously, is impelled to the conclusion, that the Khētas could have learnt this ritual from the Trojans! This opinion of the learned savant only shows how he has broadly missed the realities of the case; the Khēta practices, on cold chronology, are centuries older than the alleged Trojan war (of circa 1100 B.C.)

It would appear that, the practice of 'Sati' was not very common in Khēta, although occasional instances are alluded to. Students of Vedic lore may recall, that in the *Rig Veda* (X-15), the widow is asked to go back to the land of the living, and not to immolate herself on the funeral pyre, thus implying that suicide by fire was not obligatory on Dvija widows. The Kshatriya doctrine of Sati was apparently evolved only in post-Vedic times in India; and it permeated elsewhere, in foreign lands, as e.g., among the Greeks, and the Scythians, the Germans and the Slavs, wherever there was contact with, or acculturation by, the Aryan peoples.

As will be evident from the foregoing descriptions of Khēta history, religion, art, architecture, dress, and equipments of war, the civilisation of the people had reached a stage, which could bear favourable comparison with contemporary centres of culture. Leonard Cottrell calls the Khēta civilisation, the third greatest in Ancient history, (after the Egyptian and the Sumerian).* There was widely distributed use of gold, silver and iron

* He has, understandably, overlooked the Indus Valley culture! (Leonard Cottrell "The Anvil of Civilisation," Ch. XI).

ornaments; wool, flax and silk were extensively used in dress. The royal buildings and temples bespoke a high standard of architecture, with a grasp of the first principles of construction. The profusion of rock carvings, statues and bas-reliefs attest to the rich expertise in the plastic arts, to which this Aryan nation had attained. The excavations have thrown up quantities of animal objects in gold, silver and bronze, along with gold jugs, goblets and personal ornaments. The typical pottery of the pre-empire period, (1700 B.C.), was hand-made polychrome, painted with geometrical designs in various colours, with occasional stylized representations of birds. During the empire, wheel-made potteries became the vogue, well-polished, and in graceful shapes and proportions, and suggestive of metallic prototypes. Tothmes III, after his capture of Megiddo, enumerates the following among his spoils of victory: horses, chariots plated with gold and silver, a boat of gold, a silver statue; thrones inlaid with ivory, gold and silver; maces inlaid with silver and gold; images of ebony with golden heads; large cups of gold inlaid with gems; rings of gold and silver; painted chariots; coats of mail, swords and other weapons; rich textiles; wine jars; objects of art in lapislazuli and turquoise, and innumerable flocks of horses and sheep.

The Khēta artisans' biggest efforts in technical achievement are, no doubt, the impressions of cylinder seals found on tablets. The matrix seals were made of longitudinal perforated stone, the designs being engraved on the outer surface, which was impressed, by rolling, on clay tablets. In the words of Gurney, "although the designs are provincial in style, and contain peculiarly Anatolian motifs, they are essentially a foreign intrusion in Anatolia". This quotation is of considerable import, as it lends support to the view that the art of making cylinder-seals was taken abroad by the Khētas from the land where it is found in the greatest abundance by archaeologists, viz., the Greater Indus Valley region. Further, I venture to suggest that there is some resemblance, even as regards the designs and motifs, between the Harappan seals and those unearthed all over Katpatuka. Of course, the latter show more advancement in the art; the impressions are crisper, and the etchings on the matrices must have been more true and

artistic. They also contain legends in cuneiform, (and occasionally in Khēta picto-gram since the kings preferred to use the hieroglyph as a status-symbol, in all royal orders, etc.), in contrast with the rather crude syllabaries on the Indus Valley seals. The resemblance between the two types of seals is, however, striking as regards the figures of animals, particularly, the horse-like quadruped with a horny protuberance on the forehead. The human figures also seem to show some similarity; the presence of the lotus symbol, the large earrings (kundala) and bracelets, and the upturned shoes or sandals worn by the humans, adds an Indian flavour to the ensemble. However this may be, the idea which suggests itself to an enquiring mind desperately trying to unlock the secret of the Harappan lipi, is this. The Khēta seals have been mostly read, thanks to the finding of bi-lingual records; the Khēta hieroglyphic pictograph is also well on the way to decipherment. If there are identical motifs in the Khēta and the Harappan seals and the former are phonetically construable, then it seems possible to connect these motifs with the Indus-Valley scriptographs, to find out the phonetic values of the latter*.

In this context, an intriguing thought presents itself to one's imagination. The great processional gallery, sculptured on the outskirts of Boghaz-keui, (which was originally interpreted by a classic-minded Western critic as the march of the Amazons against the Paphlagonians,) is now considered to represent a momentous sacred marriage, something unique, even in the history of the gods. The reliefs were sculptured at the time of the wedding of Hattusilis III with the Mithrani priestess, Puduhepe (Padmasēvā = lotus treasure), as already mentioned. Gurney feels that the scenes depicted may portray the nuptials of the Weather God with Hepatu. I suggest, however, that, as already interpreted by me, the divine wedding is that of Siva and Pārvatī, probably, the most momentous union in Oriental mythology.** Indra, with his rather elastic standards of marital fidelity

* In any event, it will be a most useful thing, from many points of view, for Indian archaeologists to study the ancient Kheta culture in detail, with special attention to the inscriptions and the seals.

** In S. India, at every Hindu marriage, the sweet 'Gouri Kalyanam' tune is sung, as a climax to the wedding rites.

can scarcely be the beau-ideal of a king like Satvasitha, who seems to have conformed to a very rigid moral code; his Mātani bride, (a most masterful person,) doubtless professed similar views on conjugal obligations, and would have preferred Gouri to Iadrānti, as her patron-goddess.

One may go a hunting for analogues in Khēta, (with some success, as the charitable reader will, perhaps, concede), but I should refrain. I would like to close this chapter, however, with a little anecdote mentioned by Gurney, on which I feel inclined to give my enthusiastic, if not equally educated, guess-work, a little play. This is the 'Story of the Missing God', a popular sacerdotal theme in Khēta, over which much learned dust has been raised by Western savants. There was once a great drought on earth, causing starvation among the humans, (and also among the immortals, who sorely missed many a sacrificial meal.) The drought was caused by a mighty demon called (in Khēta) Hahhimas. The Weather-God first called on the Sun-god for help, but the latter was seized by the demon. Then the 'Protective Genius' was sent for and he was also rendered *hors de combat*, as also happened to Warun-Khatti. Certain other minor gods, in succession, failed to achieve success against the demon. Finally in desperation, the Weather-God consulted goddess Hannahannas, who advised that help should be got from the semi-divine Telepinu, a protege of the Weather-God. The latter failed at first to find Telepinu; the goddess then said that a bee should be sent to locate Telepinu and to sting him into action. This was done, but Telepinu (who was sleeping) became enraged, and refused to budge. Finally, an eagle brought him before the gods, but still in a great tantrum. At this stage, Kamrusepas, (a minor deity), exorcised Telepinu's wrath by magic, following which, it would appear, that Hahhimas was challenged and worsted in mortal combat by Telepinu. Copious rains followed, and soon the earth smiled with plenty and all was happiness, above and below !

The above narration, (which has its slight variants), appears in a mutilated jumble, in tablets under several collections, some of which lack coherent sequence. Perhaps, the names are also not correctly spelt out; as Gurney sadly confesses, the Hittite



pronunciations are only approximately known at present. But taking the material as it is, some significant parallels with India can be extracted. The Weather-God is of course Indra; Hahhimas, is the dragon Ahi, the enemy of the gods and the creator of drought. The Sun-God, is Sūrya; Warunkatti* is evidently Varuna and Kamrusepa, is obviously Kāmarūpasa, the Indian God of Love. The latter's attempt, at the request of the gods, who were being oppressed by demon Tāraka, to excite erotic sentiments in tapas-engrossed Siva, and the tragic consequences, are well-known to Indian readers. Curiously enough, Kāma's bowstring, in our Purānas, is made up of a chain of bees. As regards Hannahanna, it is difficult to find a Sanskrit equivalent, unless it be 'Sanātana', a name of Brahma, (who advised the gods in the Indian legend, to generate love for Pārvatī, in Siva, so that the spell of Tāraka might be broken). Finally, Telepinu is a hard nut to crack, etymologically. The Weather-God calls him his son; in Indian Purānas, the sons of Indra are Jayanta, Arjuna and Vāli. Can the name be *Dilīpana* (or Raghu, son of Dilīpa), who was an ornament of the Solar race and who, it is said in our Epics, went to the help of Indra, in his mighty war against a demon? It is clear, that the Khēta tablets have made a confused hotch-potch of the Vedic incidents, and mixed up names and sequences in a somewhat bewildering manner. The interesting fact, however, remains that, each year the Khēta kings enacted a tableaux, in which the princes played the parts of the various individuals mentioned in this myth, in the manner set down in the particular text chosen for the occasion.**

I may end this chapter, with the following quotation from C.H. Gordon, in his book, "Before the Bible".

"Ishtar called Hattusilis by name", says the king in his apology. This may be compared with Cyrus being called Messiah by name, (Isaiah—45), guaranteeing future victories. This Hittite parallel should be incorporated in the collateral evidence for the study of Messianism.

* The 'Protective Genius' is doubtless Mitra; the eagle is Garuda.

** Such a histrionic talent in the Kheta royalty will be in keeping with their fabled descent from Lava, the patron-hero of all actors!



TO FACE PAGE 195.

STATUE OF RAMESSES II
(Found in the Temple built by him)

"The full importance of the Hittites is yet to be realised. Among the many avenues of approach, is the study of historical writing. Already in the 2nd millennium, Hittite historiography rose far above anything the Pharaohs of Egypt and the ancient Mesopotamians were ever to produce! Egypt and Mesopotamia never got beyond the annual stage of recording history. The Hittites achieved the highest level of historical writing, prior to the Hebrews and the Greeks, who first emerged as the historians of the West. Both started their historiographic career on Hittite substratum. It is no wonder, that Herodotus, the Father of History, came from Anatolia. The seeds of historical writing were planted by the Hittites, back in the 2nd millennium, from Halicarnassus to Zion".

Note on the Treaty of Kadesh

(1269 B.C.) between Ramesses II & Hattusilis III

This document is one of the most important preserved to us, as it shows the ideals of government and of public affairs, the political situation, and many details of the religion, customs, and geography of the Khēta. The following is a summary of the Treaty, in translation, (Egyptian version, words within brackets being inserted for clarification.)

"In the XXIst year on Tybi-21, (28th November), Ramessu was in the city of Pa-Ramessu-mery-Amen, making offerings to Amen, Harkhuti-Atmu, Amen of Ramessu, Ptah of Ramessu, and Sutekh, son of Nut. (Here the city of Ramessu is substituted for Memphis, otherwise these gods belong to the four great divisions of the army). There came then "the royal opener of audience", (or introducer of ambassadors,) with messengers from the great Chief of the Khēta, namely, Tarte-sebu (perhaps "commander of the captives", who was accustomed to Egyptians), and Ramēs, (evidently, a Khēta agent), to propose "satisfactions", (he tepu) or peace. Copy of the ānu (Heb. anah, declaration,) tablet of silver sent by the great Chief of the Khēta, Khēta-sar ("prince of the Khēta") to Pharaoh, by the hand of his ambassador Tarte-sebu and his ambassador Ramēs, to ask for peace.

"The ordinance, made by the great Chief of the Khēta ; KHĒTA-SAR*, the mighty : the son of MARSAR, the great Chief of the Khēta, the mighty ; the son of the son of SAPARURU, the great Chief of the Khēta, the mighty; on a declaration tablet of silver, to RA-USER-MAAT the great prince of Egypt, the mighty : the son of the son of RA-MEN-PEH, the great prince of Egypt, the mighty.

"Khēta-sar agrees with Ramessu that there shall be good peace and brotherhood between them, for ever. He shall fraternise with me and be at peace, and I will fraternise with him and be at peace, for ever.

"The Chief of the Khēta will be with Ramessu, in good peace and in good fellowship. The children of the children of the Chief, shall fraternise peacefully with the sons of the sons of Ramessu.

"By our brotherhood and agreement, (the land of Egypt) shall be with the land of the Khēta, in peace and brotherhood altogether for ever. Never shall enmity come to separate them, for ever.

"Never shall the Chief of the Khēta make an invasion of the land of Egypt for ever, to carry off anything from it.

"Never shall Ramessu make an invasion of the land of the Khēta for ever, to carry off anything from it.

"Now, if an enemy shall come to the lands of Ramessu, let him send a message to the Chief of the Khēta to say, "Come to me with forces against him"; and the Chief of the Khēta shall come and smite his enemies. But, if the Chief has never a heart (will) to march, he shall send his soldiers and his chariots to smite the enemy, or Ramessu will be angry. Or, if the servants of the gates (frontier tribes), shall make a raid on him, he shall go to smite them; the Chief of the Khēta shall act with the prince of Egypt. (The reciprocal clause follows this, vice versa).

* A corruption of Kshattreswara or Lord of the Kshattriyas, according to Dr. A. C. Das.

"If there be one from the city, if there be one from the pastures, if there be one from the (desert), of the land of Ramessu, and they shall come to the Chief of the Khēta, never shall the Chief receive them, but shall give them back to Ramessu : if there be one of the people or if there be two of the people, who unknown, shall come to the land of the Khēta, to do service for another, never shall they be allowed to stay in the land of the Khēta, but shall be returned to Ramessu, or if there be one great man coming to the land of the Khēta, he shall be returned to Ramessu. (The reciprocal clause follows this, vice versa).

"These words which are upon the declaration tablet of silver, of the land of the Khēta and of the land of Egypt, whoever shall not keep them, may the thousand gods of the Khēta along with the thousand gods of the land of Egypt, bring to ruin his house, his land and his servants. But, whoever shall keep these words and shall not ignore them, may the thousand gods of the Khēta along with the thousand gods of the land of Egypt, give health to him, give life to him, with his house, with his land, and with his servants.

"If there shall flee one of the people of the land of Egypt, if there be two, if there be three, and come to the Chief of the Khēta, he shall take them and send them back to Ramessu. And any of the people, who are taken and sent back to Ramessu, let it not be that his criminal action is raised against him, in giving to destruction his house, his wives, or his children, or in slaying him or removing his eyes, or his ears, or his mouth, or his feet; and he shall not have any criminal action raised against him". (And likewise the reciprocal clause follows this, vice versa).

CHAPTER VI

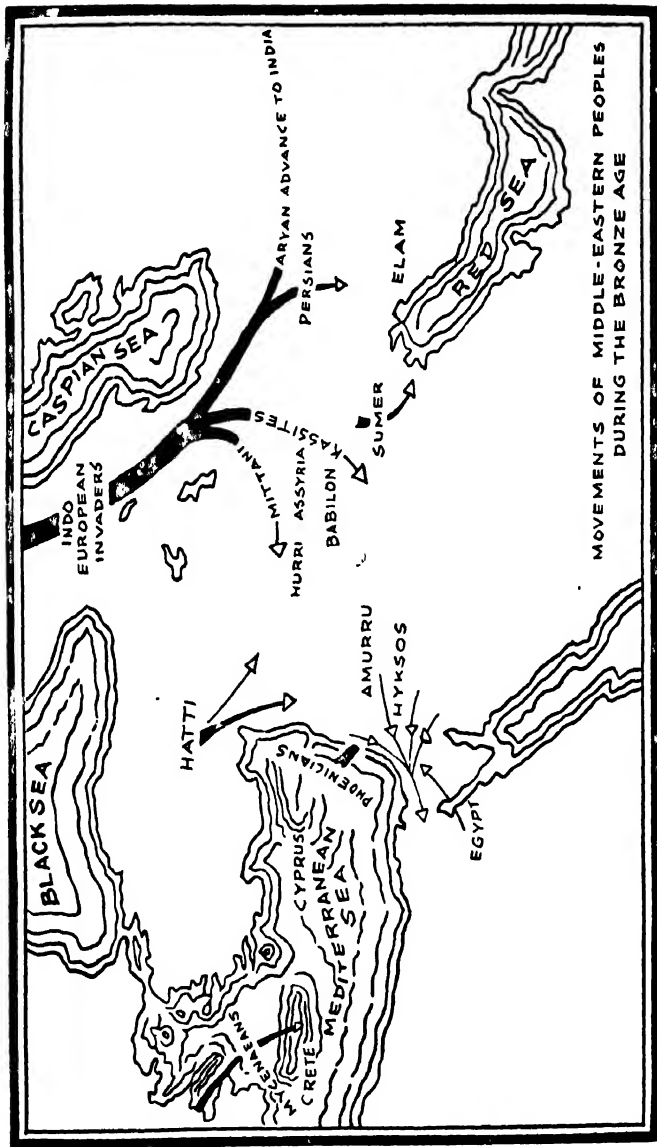
ARYAN KINGS IN THE FERTILE CRESCENT

I may be accused of some subjective thinking, if I refer to the Aryan monarchs, who reigned 3500 years ago in the Valley of the Twin Rivers, as Kshatriyas of the Lunar or the Solar dynasty. I must confess that there is no proof that these princes, of ancient lineage and great historical importance, whom I am going to present to the gentle reader, were Rājanyas descended of the celebrated lines of Puru and Ikshvāku ; but, there is no doubt that they could well be ranked with those great scions of the dynasties of the Sun and the Moon, who adorned the annals of Āryāvarta in the remote past and whose names were often found in the Mittani and Hurrian geneology of kings. These latter showed such a zeal for the Aryan faith, and exhibited in their personal behaviour and the quality of their administration, such a high regard for the Dharmic ideals of Āryāvarta, that they transcended, by a large margin, the standards, set up by the contemporary sovereigns in the neighbourhood, Semitic or otherwise. Where there was terror and ferocity, (as under the Amorrites,) they ruled with benignity and tolerance. For the repulsive gods of the Babylonians and the idol-worshipping Hebrews, they substituted the kindly and gentle divinities, familiar to the Sōma-pressing Aryan peoples of Āryāvarta.*

Sir L. Woolley calls the Mittanis and the Kassites, "Indo-European adventurers, who entered the Near East by peaceful penetration." But, apart from some energy and initiative in introducing Aryan gods and horse-breeding into the Near East, Woolley would not credit these "adventurers" with cultural achievements of any sort. To quote the distinguished writer : "The Mittanis, like their brethern Kassites and the Aryan

* H. R. Hall, in his 'Ancient History of the Near East, P. 593, says: "The Mithranis were Indo-Iranians who spoke Sanskrit, and worshipped Vedic Gods.





wreckers of Harappan culture, seem to have been a semi-barbarous people, culturally far inferior to the people whom they vanquished.”* One can well appreciate this harsh assessment of Sir Leonard, since it is consistent with his general thesis that the Aryans were a rude, uncultured and a rather upstart race, who almost did a dis-service to history, by breaking out of their obscure and impoverished habitat in the foggy marshes and rolling grasslands bordering the Caspian Sea, and ruthlessly intruding among peoples living on a far higher cultural plane than these “Indo-European” nomads. To lend graphic support to his conclusion, Sir Leonard has drawn up a sketch map of this ‘Aryan exodus’, which I venture to reproduce here for the benefit of the reader.

This map runs predictably true to form. It shows that in the ‘Bronze Age,’ (running from perhaps 2500 B.C. to 1500 B.C.), a people described, rather unaccountably, as “Indo-Europeans”,** marched from the dreary wastes of the Caspian Sea area into the rich and culturally advanced regions of South Asia i.e., the Fertile Crescent and the Indus Valley. Curiously enough, these two movements are broadly synchronised in the map, with the march of the Hittites (Khētas), into Syria and the Euphrates basin, (circa 1500 B.C.) and the Hyksos, into Egypt. (1680 B.C.)

It will be but fair, if I quote Sir Leonard *in extenso* so as to give his own interpretation of this supposed racial movement :

“In the early part of the second millennium B.C., there took place one of those mass movements of people, which every now and then have changed the course of history. Tribes of Indo-European stock, originating probably in South Russia, left their homes for some reason that we do not know, and passing through the Caucasus, poured eastwards and westwards. In the view of many scholars one branch, perhaps the advance party, whom we know

* i.e., the Hebrews, the Amorrites and the Akkadians.

* Unless the Russian steppes bordering the Caspian Sea are considered part of Europe.

as the Kassites, penetrated into Akkad, and in due course, their leader seated himself upon the throne of Babylon, founding a regime that was to endure for five and a half centuries; one branch came to a halt in northern Persia. One wave of the 'Aryan invasion,' in time broke through the mountain barrier of northern Baluchistan into India; there, they found still existing (this is generally assumed to have been round about 1500 B.C.) the great cities of the Indus Valley, whose merchants had, up till now, maintained their touch with Mesopotamia, and they overwhelmed them. Yet another group of these Indo-European adventurers, who may have entered the country originally by means of 'peaceful penteration,' for we have no hint of any warlike conquest and their numbers do not seem to have been so great as to make conquest probable, succeeded in establishing themselves as the ruling aristocracy of the Middle Hurri region. These 'Mitanni', supplied just that energy and initiative which their new subjects in that area had lacked hitherto, and with their advent, a new Great Power arose in the Middle East. The Mitanni, like their brethren, the Kassites, and the Aryan wreckers of the Harappa civilization, seem to have been a semi-barbarous people, culturally far inferior to the nations which they vanquished; they did indeed, introduce the worship of the 'Aryan' gods, and (what was more immediately important), they introduced the horse to Asia Minor and popularized the breeding of it there; but apart from this they could contribute but little to progress."

(P.387 — 389, History of Mankind—Cultural and Scientific Development, Vol. I)

The renowned archaeologist is categorical in his views, and emphatic in his language. He does not admit of any doubt or qualification in his theories, even when confronted with divergent views of prominent Indian scholars, as the following citation would show.

"Some Indian scholars have advocated a theory on the indigenous origin of the Aryans; see R.C. Majumdar, ed.

The History and Culture of the Indian people, I, the Vedic Age (London, 1851), pp. 215-17. The National Commissions of India and Pakistan, as well as Professor I. M. Diakonoff and Professor G. F. Ilyin, draw attention to the fact that there is more than one theory regarding the fall of the Harappa civilization. M. R. Sahni, *Man in Evolution* (Calcutta, 1952), pp. 153-4, holds that floods were responsible for the destruction, while A. Ghosh, 'The Rajputana Desert: Its Archaeological Aspect,' National Institute of Sciences of India, Bulletin, No. I (1952), pp. 37-42, discovered a gap between the end of the Indus Valley civilization and the incoming of the 'Painted Grey Ware People'. Sir Leonard Woolley, however, considers that these different theories are not of equal value. That of a flood being responsible for the destruction of the great Indus Valley cities is inconsistent with the fact that citizens were killed in the streets. The overthrow of the cities would result in the neglect of the canal banks and therefore, in the flooding of the sites after the war. According to Sir Leonard, a gap between the fall of Harappa civilization and the settlement (not the incoming) of the 'Painted Grey Ware People' would be inconclusive as an argument for, or against, the view that they were responsible for the destruction of that civilization; if they were the Aryans, they were still in the pre-urban stage and would take time to settle down. The fact of the gap is still non-proven." (Pp. 411-12, *History of Mankind, Cultural and Scientific Development*, Vol. I)

It is now for the gentle reader, to judge whether Sir Leonard's views should not stand substantially modified in the light of my following observations:* The year Kaliyuga 1602 (or circa 1500 B. C.) is a date of almost hypnotic significance to most European Indologists, since it represents (to them), the time of the alleged entry, over the Hindu Kush and through the Khyber Pass into the Indus Valley, of a nomadic, semi-barbarous, race-conscious and often ruthless group of people, who called themselves Aryas (i.e., noble or elect) and who showed an avowed contempt for the dark-skinned aborigines of the areas

* Which may savour of repetition, for which I crave the reader's indulgence,

which they forcibly intruded upon. Yet, most bafflingly, within the space of perhaps two or three hundred years of their assumed arrival into the Indian borders, one finds these people living in well-built cities, ruled over by kings renowned in legend and religion. Even according to the chronology now admitted by most European critics, by about 1000 B.C., the Aryan "nomads"* had written their four monumental Vedas, (the oldest living literature in the world), produced the Brāhmanas and the Āranyakas, built up an elaborate system of philosophy in their Upanishads, (supplemented in due course by the six Darsanas, going back to the beginnings of the 1st millennium B. C.). Meanwhile, they had advanced over a thousand miles to the east and the south, incidentally "destroying" the highly civilised, but singularly unfortunate, Indus Valley people. These "terrible" Aryans had also, by this date, over-run the Deccan, after crossing dense forest and high hill, and advanced almost to the tip of the peninsula. By 1000 B. C., they had evolved theological creeds ranging from the rank materialism of the Chārvāka, to the intense ritualism of the Mīmāṃsa, from the cold rationalism of the Sāṅkhya, to the brilliant transcendentism of the Vēdānta; made momentous advances into the realms of phonetics, grammar, etymology, poetics and astronomy and astrology; established world-famous universities, and progressed in the human arts and sciences to an extent that excites the awe and wonder of the modern critic; all these had been achieved, the gentle reader is told, within an interval of a mere three or four centuries, after their 'invasion' of India, if we may believe the time-table of the European savants.

But, fortunately, for the reputation of the Aryan race, facts connected with historical tradition, language, comparative religion and archaeology, have quite shaken the time-table, so confidently set by Western scholars; recent discoveries, mainly cultural and archaeological, have done much to damage the picture, nicely

* "That the Hindus were not nomads is evident from the repeated allusion (in the Vedas) to fixed dwellings, villages and towns. They were an agricultural people. They were a manufacturing people. What is more remarkable, they were a maritime and mercantile people" Wilson; Introduction to the Rig Veda; Vol. I, P. XI.

built up by them.* As I have explained elsewhere, the so called Indus-Valley culture is not confined to the Indus Valley. It is spread all over Sapta Sindhu, whose geography I have delineated at some length in Chapter IX. It extends right into Afghanistan in the north, to Upper Gujarat and Kathiawar in the south. More and more we find evidence of highly developed and well-settled urban life, unmistakably Aryan, all over northern India and upper Deccan, by about 1500 B.C., with all the usual paraphernalia of superior pottery, precious ornaments, sophisticated tools including those of iron, images and statuary, skilled textiles and toiletry. One has only to mention such names as Pushkalāvati (Charsadda), Takshasila** (Taxila), Purushapura (Peshawar), Kausāmbi, Ahichchatra, Hastināpura and Indraprasthā, Kāsi, Klēsapura and Pātaliputra (Patna) to raise memories of ancient and civilised realms, ruled over by the kings, celebrated in literature and popular lore, which have, yet, left relics showing positive evidence of their ancient origins, going well back to the latter half of the second millennium B.C. One may dismiss the Purānas and the Mahā Kāvya, as mere old wives' tales and imaginative vaporings of

* The recent excavations at Kausambi, the ancient capital of the Vatsas, have revealed the remains of a considerable city, with a great system of fortifications, whose date would go back to the closing years of the 2nd millennium B.C. Walls and rivetments in burnt brick, under-ground passages as well as drains, built under corbelled arches, and the sturdy red-ware pottery, are reminiscent of the Indus Valley culture; in addition, the city had large moats, watch towers, guard rooms and subsidiary fortifications, of the type, so well described in the Artha Sastra of Kautilya. The presence of many sacrificial pits and animal bones, bears evidence to the culture being continuously Indo-Aryan.

An interesting choololithic site has been recently discovered, near Ujjain, containing remains reminiscent of the Indus Valley culture, and dating back to 2000 B.C., At Taxila, artefacts of the Indus Valley type (2000 B.C.) have been recently un-earthed.

** Both these cities are mentioned in the Ramayana (VIII, 10f, (10-16) as old capitals founded by Bharata, son of Kaikēyī. Bharata installed his two sons Taksha and Pushkala as rulers in the two cities and named the cities after them. The Mahabharata repeats this story. The Jataka tales repeatedly mention these cities, which must have been very old in the 7th or 8th century B.C. Both the cities are also mentioned by Panini, and by the Greek writers.

self-appointed "seers"; but we cannot disregard cold archaeological data, which seriously upset the dead line of 1500 B.C., set for the Aryan 'invasion', by the foreign experts, and their dedicated disciples among our own historians.

To come back to the Near East and Africa in 1500 B.C.: we had seen two great River-Valley civilisations, (Egypt and Mesopotamia) develop, independently of each other, except for peripheral contacts and, (according to my thesis,) except for a common source of racial admixture, and common inspiration in the matter of religion and culture. Both had invented a system of writing and developed a cosmogony and a pantheon, well stocked with divinities and celestial incidents. Both understood the science of agriculture and irrigation, ship-building, carpentry and metal working, (other than ferrous). In both areas, the plastic arts had reached a high degree of efficiency; in Egypt more so, and almost bordering on perfection. Both were ruled by hereditary kings, who were priests as well, and who were supported (and sometimes opposed) by a powerful body of priest-hood. In both River-Valleys, dynasties rose and fell, but in Egypt there was more stability, and except for the brief and tragic interlude of the Hyksos or Shepherd Kings, the land was spared foreign invasions and there was much pomp and refinement, both in this life and thereafter. The Valley of the Twin Rivers, however, told a different story; it was repeatedly overrun, by the Akkadians and, later on, by the Assyrians. Lower Asia Minor (Syria, Palestine etc.,) was a veritable cock-pit and a melting pot of races—Aryan and Semitic. It remained constantly exposed to waves of nomadic Hebrew tribes, moving north or west, according to the needs of the political situation; the Hebrew nation, an amalgam of the Semite and the Aryan, was being born about this time. In the far north, in Anatolia, a powerful state, that of the Khētas, whose story we have narrated in some detail, had arisen to dazzling power, pushing south into Syria and challenging the Egyptian colossus, for the control of the the Mediterranean coast. Along the banks of the Euphrates, yet another empire was rising, that of the Assurs or the Assyrians. In the Island of Crete, a great civilisation which had taken root, had been overthrown almost without a trace, by the half-savage Myceneans, after flourishing for nearly 1500 years.

The great river Euphrates, (which was known to the ancients as *Barbara*) takes a sweeping bend to the south after flowing westward from the foothills of Anatolia. In the broad semicircle formed by the river south of Katpatuka, there thrived for several centuries the Aryan kingdoms known to the Greeks and the Hebrews, as Hurrian, Mittani and Kassite. In the year 1500 B.C., when we start the story of these kingdoms, they were inconspicuous in local politics and had not figured in regional history. They were hemmed in by powerful neighbours on all sides. In the north was the emergent Khēta empire, which, under the dynasty of Lavana (Labarna), had consolidated the various petty mountain principalities into a sizable empire, and as a token of its new-found strength, was edging south-west into Syria and Lebanon; Tudhaliyas II was about to attack Aleppo. The Egyptian giant, who had been supremely content to remain for over two thousand years within the Nile Valley, except for occasional naval exercises in the Mediterranean, was now moved by a "forward spirit", probably as a result of the Hyksos invasion, which taught the need for a "safe frontier" in the Asiatic main land, from where attempted intrusions could be nipped in the bud, and where the might of Egypt would be in demonstration to would-be aggressors. The XVIII Dynasty of Egypt (1570 B.C.-1350 B.C.) thus started the realm on a military career; Thutmosis III (1486 - 1450 B.C.) called appropriately, 'the Napoleon of the Nile Valley', was a monarch of great ambition and some-thing of a military genius. He was about to shake off the slumber of the Egyptians and start an era of conquest in near-Asia. In Mesopotamia, (or Kar-Dhumiya as it was called by the ancients, Sanskrit: Kardhama waterlogged, slippery, flat), Babylon had been recently (circa 1630 B.C.) captured by the Khēta King and the rule of the Amorrite dynasty ended. It will not be till another 450 years (i.e., 1170 B.C.), when the 'Assur' kings would set up Assyrian rule in lower Mesopotamia, which rule would last, despite various vicissitudes, till the close of the 6th century B.C., when the Medes, (i.e. Persians), would finally overthrow the hated 'Assurs' for ever.

This was the political horizon in which the story of the 'Kshatriya' kings commences. Almost a thousand years before the rise of the Persians (i.e., about 1600 B.C.), various powerful and enterprising Aryan tribes had advanced directly from Sapta Sindhu, westward into the lands lying between the Caspian Sea and the lower Euphrates Valley, which was, then, ruled by the Amorrite kings of Babylon. These tribes were those known to the Hebrews, as the Hurrians, the Mittanis and the Kassites. It is true, that some other Aryan tribes either preceded or followed them; for example, the Khētas (or Hittites) had gone ahead of them into Katpatuka and the Mediterranean coast, and the Phrygians were to succeed them in these regions. In between these two waves of migrations, the Hurrio-Mittanis and the Kassites carried into the Euphrates Valley, the culture and religion of Āryāvarta directly overland, according to all available indications.

The origin of the Mithrani (Prakrit : Mittani) is shrouded in some mystery. Says Rogers, "The kingdom of Mittani must take its place among the small states, which have had their share in influencing the progress of the world, but whose own history, we are unable to trace." Luckily, recent archeological researches have supplied some of the missing gaps. The kingdom was situated, as I have said, to the north of Babylon, between the Tigris and the Euphrates, in their upper courses. The people were called Naharains (River-people) by the Egyptians and are referred to as Aram-Naharains, (i.e., "the swift ones of the River Valley"); (in Sanskrit, 'aram' means swift and 'nahar' is a river)*. The earliest record of this nation obtains in the reign of Thutmosis I of Egypt, who reached the Mithrani kingdom about 1550 B.C., and defeated its king in a battle, fought on its western border. (Thutmosis erected a stele on the Euphrates, to mark the limit of his domination). In 1522 B.C., Thutmosis III again invaded Mithra and made it tributary to Egypt.

From this time, there was constant intercourse, diplomatic and commercial, between Mithra and 'Misra'; occasionally it

* Nehru=Naharu.

assumed a connubial form, as when Thutmosis IV accepted, in 1420 B.C., a Mithra princess as his bride, (but not as the 'lady of the first rank'); his son Amenhotep III also married into Mithrani royalty and the third instance is that of the famous Pharaoh schismatic, Ichchnaton, who married the wondrously handsome Neshthiki (glyphed—Nefertiti). the sister of the Mithra king Dasaratha, as I have narrated elsewhere. This alliance between the scion of the Pharaoh line and "the most beautiful queen in history", must have been a celebrated nuptials in pre-history and the most spectacular, if we may believe the mural paintings, strewn all over the Nile Valley, by the adoring Ichchnaton.

The relations between the two peoples, Egyptian and Mithrani, must have been rather cordial after these alliances. For, while the Egyptian hieroglyphs always refer to the Hittites, as "the abominable Khēta," they use studiously polite language while describing the Hurrio-Mithranis. The wall pictures also, convey the impression that there was considerable difference between the physical appearance of the Khētas and the Mithras, in the eyes of the shrewd Egyptian artists. The former are shown as a stocky, pop-eyed, awkward people, with parrot-like noses; the Hurrio-Mithranis appear as a tall and handsome race, with flashing eyes and aquiline noses, the women folk, particularly, being depicted in quite attractive outlines. This curious difference in physiognomy between two peoples, of practically the same racial extraction, is however easily understood, when we view the present-day representatives of the Aryan race, in different parts of India. A Kashmir Brahmin normally looks different from one of South India, at least, at the first blush; a Khatri from Rajaputana does not always bear much physical resemblance to his *vis-a-vis* from Bihar. It is possible also, that the Misra artists mixed a little malice with their drawing ink!* The Tell-el-Amarna letters of the Pharaohs' archives, referred to elsewhere, make frequent mention of the Mithra princes. We learn, that between 1470 B.C. and 1400 B.C., there reigned four kings in

* While delineating the 'vile Kheta' (The Kheta physical type has been termed Armenoid).

Mithra, named Artadhama, Artasama, Sudharma and Dasarata.* The last named has left a deep impress on pristine Near East history. He was the participant in a famous treaty with the Khēta king, Suppiluliumas, the text of which, written in cuneiform, has been unearthed at Boghaz-keui. Like all bilateral treaties of that time, the preamble recites the names of the gods of both the high contracting parties, in whose name, a solemn oath is taken by both kings. While the Khēta monarch swore in the name of the Weather-God (Indra) etc., the Mithra king cited his own deities viz., the Vedic gods Mithrā-Varuna, Indra and the Nāsatyas, (the Aswin twins), famous as equestrians, and doubtless in special favour with the 'horsy' Mithras. The joint mention of Mithra and Varuna is a strong indication of the Mithra people having gone straight overland, from Āryāvarta, without their theology or language being much corrupted by adhesions or prunings on the way.** I had made mention earlier, of the manual on horse-training, prepared by one Kikkuli, a Mithrani, for the use of the Khēta kings, in circa 1400 B.C. This manual was written in colloquial Sanskrit, slightly different from Prakrit. While the latter slurs over compound syllables, (e.g. Mithrani is pronounced as Mittani), the language, used by Kikkuli, is almost identical with Sanskrit except for some slight vowel inflections (e.g. ēka, (one) is spelt as eika).§ There is no room to doubt, that the tongue used in this book of instructions, was Sanskrit. The

* Other Royal names found in records: Prasastar; RTasmara. Sangkshattri; Mathiraja; Viryasura; Purusha; Kshemasura; Sataraja; Indrota; Subandhu Satwasa.

** Dasaratha (whose sister had married Pharaoh Amenhopis III) wrote to the latter as follows, after he had checkmated the Kheta monarchs' attempted invasion of Mithra "Teshub (Deva-Simba), my Lord, gave the enemy into my hand and I routed him."

§ Some of the technical terms used by Kikkuli are given below, with their Sanskrit and English equivalents :

<i>Mittani</i>	<i>Sanskrit</i>	<i>English</i>
eika wartana	eka vartana	One turn
tera wartana	thraya vartana	three turns
pansa wartana	pancha vartana	five turns
satta wartana	sapta vartana	seven turns
naivartana	nava vartana	nine turns

phrases used are very similar to those, found a thousand years later, in the Artha Śāstra of Kautilya (C.325 B.C.). This great Mauryan statesman has a special chapter on cavalry exercises: he mentions, like Kikkuli, various movements of the equine trainees, such as circular movement, response to signals, jumping like a monkey, jumping like a frog, leaping like a cuckoo or a crane, and galloping at full stretch, with the breast almost touching the ground.

When did the Mithra people come into the River Valley and how? The historians trained on Western lines were at first considerably taken aback to find that, in the Near East, there were a Sanskrit speaking people established in power round about 1500 B. C. This situation militated completely against their favourite theory, which was that the semi-barbarous Indo-Aryans, leaving their habitat round the Caspian Sea, entered the Punjab in 1500 B.C., and started their career of indiscriminate aggrandisement. If these Indo-Aryans, speaking a Sanskrit tongue, were in the Indus Valley between 1500 and 1200 B. C., how did it happen, that a similar people, close enough in language, religion, and physique, to be the first cousins of the same Aryans, were simultaneously consolidated in power, in the Near East, at least a thousand miles away from the Indus basin? After some initial hesitancy, the answer soon dawned upon the learned professors and it was this: there must have been several groups of Indo-Aryans moving out of the Caucasian steppes, some going east into Sapta-Sindhu, and the others, the Hurrio-Mittanis, the Kassites, and the Khētas among them, moving *south and west* into the region now represented by Iraq, Persia, Syria and Anatolia. The latter movements must have been earlier than 1500 B. C., otherwise the historical facts, as now established, would not fit in with the chronology, to which the European savants obstinately adhered. So far as the people who moved east were concerned, however, the deadline was still 1500 B.C. In their view, these two divergent groups had developed the same ideologies, the same rituals and the same manners and customs; and worshipped the same deities, in their respective new habitats separated by hundreds of miles; the original germs of knowledge, thought, and feeling, and the original impetus,

apparently, continued to persist in the widely separated peoples, hailing from the Caucasian steppes.*

My own suggestion is, as will be clear from the trend of my previous comments, that the Indo-Aryan groups, who migrated into the Near East, and whom we find settled there in diverse political units, from 1800 B.C. down to about 700 B.C., were none other than branches of the very Aryan nation, which was autochthonous to Sapta Sindhu, and which had been living there for thousands of years, before the "drang nach westen" started over-land, sometime about 2000 B.C. We do not know in what circumstances this march west-ward was initiated. It might have been consequent on pressure of population, and perhaps on internal strife among the Aryan clans, of which we find ample evidence in the Rig Veda. Possibly, the bee-hive might have become overstocked with tenants. The great migration might also have been due to the quest for new lands and new adventures, stimulated by the congenial climate in the adopted territories which was either cool and hilly, or fertile and well-watered, and accorded well with the terrain familiar to the Aryan tribes in the Himalayan and Indus Valley regions. That the distance, involved in these western migrations, was no great problem would be obvious to those familiar with the travels of the infant Aryan peoples. Even according to the orthodox school, the Indo-Aryans travelled thousands of miles into Bihar-Bengal, and into the Deccan and South India, during the course of two or three centuries. I presume the same critics would allow the postulation of a similar move, towards the regions of the setting sun, on the part of the same Aryans. That the Aryans were great travellers, is borne out by various incidents of folk-lore and history. I have already spoken of the 'Panis' and the Asuras, who travelled abroad, by land and by sea, and built for themselves great kingdoms in new surroundings. To give a supreme instance of their commercial enterprise, the voyage of discovery of Hanno, (Sannah) the Punic, in the 6th century B.C., may be cited. It reads like a fairy tale but is attested to be quite

* The use of the name 'Caucasus' by the Greeks, for the *Himalayas*, has resulted, no doubt, in some confusion of geography.

true by Greek sources. With 60 ships of 50 oars each, and with no less than 30,000 people on board (with necessary provisions etc.), he sailed from Carthage, rounded Gibraltar, sailed along the African coast down to the Cameroons, and established no less than 20 or 30 settlements along the coast of Africa, following which, there was a brisk trade in gold and other merchandise between West Africa and Carthage! Our own history, also, records the on-ward march of the early Aryans into the Indian-sub-continent, inspite of numerous obstacles, physical and otherwise, so that within perhaps a thousand years, more than a million square miles of territory were brought under the Aryan sphere of influence. If we may believe Vālmiki, Kavātapuram, the capital of the Pandya kingdom, ("adorned with pearls and precious stones and fit for the Pandyas", says Vālmiki) was an ancient town, even at the time of the Rāmāyana war (circa 2000 B.C.?). The Purānas record that Aryan princes chose their brides from far off countries—Dasaratha took a wife from Kōkaya near Kashmir, a distance of nearly 1000 miles from Ayōdhyā. Pāndu's wife hailed from Madra, about 400 miles from Delhi. Dhritarāshtra's wife came all the way from Gāndhāra (Kandahar). Many stories testify that the valorous Rājanya chiefs were devoted to the Asvamēdha sacrifice, during the course of which they circumambulated the whole of the then known world, i.e., the major part of India and Afghanistan. We had seen that Raghu, the ancestor of Rāma, went to Pārāsika (i. e., Iran). Arjuna is reported to have visited Nagaland and Tibet during his pre-sacrificial 'digvijaya'. In historical times, we have the voyage of Skylax, the Persian, up the Indus to the 'Land of the Gods', in the 6th Century B.C.. Pānini, in the 8th Century B.C., travelled all the way from Sālātura on the Indus, to Pātālīputra (Patna), a distance of over 1000 miles, to receive his "certificate of merit" from the local king. Chandragupta Maurya travelled from Magadha to the Jhelum, to meet Alexander. His grandson, Asōka, made world history by sending out numerous missions, to Ceylon, Egypt and Syria, to mention only a few places.*

* Asoka sent missions to the Courts of Amtiyoka (Antiochus of Syria); Turamaya (Ptolemy of Egypt); Amtikena (Antigonus Gonatus); Maga (Magus of Cyrene) and Alikasundara (Alexander of Epirus). Asoka's sister, Sangamitra, settled down in Ceylon, with a large following.

(It seems to me, that Asōka would not have been prompted to get into personal contact with those distant lands, unless there was a living memory of the migrations of Indian people to those lands, and the spread of Aryan religion and culture therein). I can, perhaps, cite here the opinion of G. Rawlinson, who admits in his 'Essay on Herodotus', that "the great migration of the Aryan race west-ward, from beyond the Indus, simultaneously with the movement of a kindred people east-ward and south-ward to the Ganges and the Vindhya mountains, is an event, of which the most sceptical criticism need not doubt, remote though it be, and obscurely seen through the long vista of intervening centuries."

It is clear that the western migrations must have taken place before the rise of the powerful kingdom of Assurs, in the 14th century B. C. In the welter of local politics in the Near East, the Mithras had occasionally to ally themselves with the Khētas, (their own kinsmen), to fight the Assurs, and vice versa. The situation with regard to Egypt was similar in the beginning, but latterly, the bond of friendship between the two countries grew firmer, especially after they were cemented with matrimonial alliances. But the Mithra princes always wrote to the great rulers surrounding them as equals, and till the end, (when their rule was broken for ever by the Assurs), they maintained their kingly dignity and adhered to their high spiritual mission, as the torch-bearers of Aryan religion and culture, in their adopted home.

I have not said much about the Hurrians,* (or the Sūrya people), in this narration, because not much is known about them, apart from their close allies, the Mithras. In fact, there is justification for treating these two clans under a common grouping, since the relations between the two peoples proved to be particularly intimate, a fact which is reflected in their culture, and such history as one is able to glean. One would be almost justified in speaking of a Hurrio-Mithrani symbiosis, so far as their civilisation and chequered history are concerned.

* The Bible calls them 'Horites'. A Hurrian named Irsappa is listed as an envoy of Amenhotep III.

The situation is slightly different as regards the Aryan tribe, known variously as Kassites, Kissites or Kosseans, who were first met with as inhabiting the region of Elam, slightly to the east of Babylon, in the Twin River Valley. About 1850 B.C., they rose in revolt against their Babylonian overlord, (the successor of Hammurabi,) and overthrew him and established an Aryan dynasty, starting with King Kandish or Gadhis, (Gadhira = hero), which ruled over Babylon for nearly 600 years.* Following this event, all Western Asia shook off the yoke of Semitic Babylon; Syria and Palestine became independent and the hated rule of the Amorrites, a singularly unattractive people, with a horrendous Code of Laws, (enacted by the famous Hammurabi,) was eclipsed for ever in this area. Till 1200 B.C., when the dreaded Assur kings conquered north Mesopotamia, Elam and Babylonia, (Illam and Babiru, in Vedic nomenclature,) enjoyed mild and prosperous Aryan rule, comparable to that of the Mithranis in the adjacent north. The divine attributes, which the Semite kings of Babylon had claimed, vanished, once for all. The Kassite rulers never claimed to be gods, but Babiru continued to be the holy city of Western Asia, thanks to the intense Vedic fervour, shown by the people and the potentates. All princes in Western Asia, claiming legitimate succession to a vacant throne, whatever country they might belong to, had to go to Babylon, to get an initiation at the temple of Bala, (also called Siva) in this city. As one historian observes, "down to the Persian era (536 B.C.), Babylon was the religious head of the civilised East". It might be added, that portions of Babylon were known as Bhirtu; and the adjacent province, as Bharti; the names are considered to be borrowed from 'Bhārata', the post-Vedic name for India.

Not much is known of the successors of Gadhis, but about 1400 B.C., we find the Kassite rulers Kadasman and Burnaburiash II, (Varuna-Virya,) corresponding with the Pharaohs of Egypt**. Subsequently, the Kassite kings joined in a confederacy,

* The Rig Veda mentions a king called Gadhi, to whom Indra was born as a son. In our Puranas there is mention of a king called Gadhi of Kanyakubja. Jamadagni was his grandson, through his mother Satyavathi, a Rajanya princess of Kanyakubja, who married rishi Richika.

** A king, named Abhiratha, is also mentioned.

headed by Aziru, the Amorrite, against the Egyptian Pharaoh Ichchnaton, who lost his hold on lower Syria and Palestine, as a consequence. It would appear that the Kassites played no inconsiderable part in keeping the brave Aryan flag flying in south Mesopotamia, and in keeping under check the fierce and ruthless Assur pretenders of Nineveh, who were Semites. That the Kassites were pure Aryans from across the Indus, is borne out by the fact, that their family deities were Suryas, (Sūrya) and Maruthas (the Maruts). Their language bore close similitude to Sanskrit and the kings often described themselves as 'Khatris' and 'Aryas'. Says H.R. Hall, "There is little doubt, that the Kassites were Indo-Aryans and spoke an Aryan tongue. Their chief god was Suryash (Sūrya), and their word for 'god' was Bagash (Bhaga), the Slav Bhogu, and the Phrygian Bhagaois. The termination, 'ash', which appears after the Kassite names, is like Greek, 'os', and Sanskrit, 'su'. Such a name as 'Indu-Bagash' (i.e., Sindhu Bhaga,) is clearly Aryan".

Dr. A. C. Das thinks that the west-ward movement of the Khētas, the Mithranis and the Kassites must have occurred after the battle of Kurukshētra, which he dates about 3100 B.C.. I am afraid such an early date does not square in with the known career of these enterprising peoples. Further, the date of the great Bhārata war is generally considered to be circa 1440 B.C., on astronomical and other indications.* I suggest, therefore, that the outward thrust of these Aryan clans from Sapta Sindhu towards the setting sun, should be made to coincide with the dissolution of the great empire of Ayōdhyā, after Śrī Rāma's passing away, in about 2000 B.C. It is significant that one Mithra king called himself Dasaratha, another successor king, Satrugna, and a descendent of his was actually named Ikshwigu (Ikshvāku), after the legendary founder of the Solar race in India. We have already noticed that the Khēta kings claimed descent from a remote ancestor, named Lavana, who may possibly be connected with Prince Lava, son of Śrī Rāma. A theory has also been put out that the Kosseans, or Kassites, might be

* See Note to this Chapter, on 'Traditional History'

connected with the other branch of the Solar race, hailing Prince Kusa, (son of Śrī Rāma), as their progenitor.

The Rājanya kingdoms in the Near East were so mercilessly treated by their 'Assur' conquerors, that all trace of them has been mostly lost. As an example of the ferocity with which Aryan culture was extirpated by the Assuras, I may give the following extract from a record, left by an Assur ruler, after his conquest of Babylon. "I slew one of every two. I built a wall, before the great gates of the city. I flayed the chief men of the rebels and I covered the wall with their skins. Some of them, I enclosed alive within the bricks of the wall; some of them were crucified alive with stakes along the wall. I caused a great multitude of them to be flayed in my presence, and I covered the walls with their skins". Then again Assur Banipala (Sardanapalus, to the Greeks,) has left the following testimony to his policy of calculated cruelty :—

"For one month and twenty-five days, I devastated the districts of Elam (Illam of the Mithranis); sons of kings, sisters of kings, members of Elam's royal family, young and old; prefects, governors, knights, artisans, horses and mules, more numerous than swarms of locusts, I carried them off, as booty, to Assyria. I put an end to their fields, which I left for the asses, the gazelles, and all manner of wild beasts, to dwell." Tomlin justly remarks, that the above was a comparatively mild example of the frightfulness of Assur Banipala.*

Mention has been made of the Phrygians, as the successors in power to the Khētas, in Anatolia. These people, who were undoubtedly of Aryan extraction, seem to have lived in central Katputuka during the Khēta empire and had been vassals of the princes of Sathvasa. They were essentially an agricultural race and their religious exercises had frequent reference to delays in, and renewal of, the blessings of nature. They worshipped a goddess called "Amma", (a corruption of Ambā, mother,) who was called by the Greeks, Rhea (the mother of Zeus and other

* "Great Philosophies of the East"

major deities, and the daughter of Uranus or Varuna.) She was also known as Cybebe, (pronounced Kybibi,) to the Greeks and the Hebrews. In Phrygia, she was worshipped in the form of a shapeless meteorite stone, said to have fallen from Heaven. The beloved of Amma was Attys, whose birth and death were celebrated with wild rejoicing and deep mourning, every year. According to Western historians, Cybebe (Sanskrit: Kāsyapī) or Amma, symbolised Nature as the producer of life, the birth and death of Attys, representing spring and autumn, respectively. It is clear, that Amma really represents Mother Earth and Attys is none other than Atri, the *alter ego* of the Sun-God. In Indian myths, he is represented as having been rescued by the Aswins from the clutches of the Asuras, who kept Atri imprisoned in a hot-house. The myth obviously refers to the fierce summer sun who is refreshed by the timely monsoon rains. Conversely, when winter comes, his power diminishes and his decline is an occasion for mourning among the people. The legend of Amma and Attys clearly shows that the Phrygian mythology was based on Indian sources. The Supreme God of the people was Bhagaois ; (Vedic Bhaga and the Slavonic Bogu).*

Herodotus mentions that the Egyptians thought the Phrygians to be the oldest people on earth, while the Greeks were inclined to identify them with the Brigians of Thrace, north of Hellas. Dr. Taylor considers that the Armenians and the Phrygians were racial extensions of each other and thus formed the links of the bridge, connecting the Aryans of the East with the Greeks and the Slovenes. Dr. A. C. Das supports the view that the

* The Christians have borrowed the legend of Atri, the Sun God, as the following quotation from the 'Time' dated 10-12-65 would show : "The fact is that Christmas never belonged completely to the Church. It began as a pagan festival. Long before the birth of Christ, Dec. 25th was celebrated in pagan societies as the day on which the Sun began its yearly rebirth, (i.e. the winter solstice); astronomically, they were only 3 days off. Peasants in north Europe decorated their homes with ever-greens, as a tribute to nature's victory over numbing winter. The Romans celebrated the winter solstice season to honour Saturn ; [the well known Saturnalia, marked by excessive feasting and drinking]. The Christian missionaries, figuring that pragmatism was called for, combined the two holidays (Christmas & Saturnalia) into the mixture of religious and secular customs, that remains today".

Phrygians, Armenians and the Brigians formed one ethnic group, and that they must have been a branch of the Bhrigus,* mentioned as an Aryan people in the Rig Veda; he cites the opinion of a writer,** who states that "there are indications, that the Phrygians once extended their rule over a much wider area than that assigned to them in the maps of the ancient world; that they held command of the sea-board and were even found beyond the Aegean". It seems probable, that the Phrygians belonged to the same stock as the Pārāsikas, who left Āryāvarta, under the leadership of Yima, on a long thrust into the circumpolar region *via* Armenia, and the regions now forming part of Russia in Europe. §

I shall end this tale of the Aryan nations in the Near East, with a few remarks regarding the Lydians, who rose to power in Western Anatolia, (which was called Lydia by the Greeks,) after the downfall of the Khēta empire, in 1190 B.C. Their origin remains still a matter of speculation, but they seem to have been a mixed race, with a strong Aryan strain over-laid on the aboriginal population. Their language was Indo-European, so far as we can judge, more allied to Greek than to Prākṛit, which was the tongue of the other Aryan groups I had mentioned previously. The nation was characterised by a keen commercial spirit and some martial qualities; it is credited with inventing the ball-game and with issuing the first coined money, (made of electrum and called a 'mina', an unit already familiar to us). Under the famous King Croesus, it became quite a power on the Aegean Coast, but the Persians made Croesus a victim of his own vaulting ambition, and Lydia became a province of the Persian empire, in the 6th Century B.C.

* I have referred, elsewhere, to the theory of Mr. Karandikar, that the Brigians were descendants of Parasurama.

** In the 'Historian's History of the World', II.

§ There was a province called 'Pontus', in Asia-Minor. The name is based on Sanskrit 'pantha' which means 'route'. It is possible that the name symbolises the fact that Asia Minor was once the Aryan high-way from Asia into Europe.

The capital city of Lydia was Sardis, which meant 'a year', in the local language; (Sanskrit 'sarad').* The religion of the Lydians resembled that of the Phrygians; the supreme God was Mahdeus (Vedic, Mahādēva), supported by the Sun-God, Attys, who was visualised simultaneously as the son and the husband of Cybebe, the mother of gods. (In Indian myths, the Sun was often spoken of as the off-spring, as well as the husband, of Ushas, the Dawn). In the words of a historian; "Like the Semitic Tammaz; (or Adonis),** Attys was a beautiful youth, who had mutilated himself in a moment of frenzy and despair; and whose temple was, therefore, served by eunuch priests". The reference to castrated "pūjāris" is rather significant, in view of the Vedic myth (Rig Veda, V-78) which mentions a rishi called Sapta Vadhri, (literally "seven eunuchs"), a reputedly married son of Atri, whose brothers used to lock him up in a chest every night, thereby obstructing his conjugal functions. The rishi thereupon prayed to the Aswins, who gallantly responded and restored to him his marital happiness. (The myth, obviously, allegorises the debilitated winter sun being freed by the rosy spring). Strangely enough, the Lydians were 'sisnadēvas', (phallic worshippers), and the lingam was in wide distribution in Lydia, as an emblem for averting evil and conferring mundane prosperity.

I may end this chapter with a short survey of what is called the Mithra cult. As is well-known, Mithra was an ancient Aryan god, often praised in the Rig Veda. He is generally bracketted with Varuna, and the two are constant companions, inseparable as night and day. Varuna gradually gets idealised in the later Vedic literature and becomes the 'most moral god in the Vedas', as Dr. Radhakrishnan observes. He is stern to the guilty and kind to the innocent, and keeps a watchful eye over the doings of both mortals and the immortals. Mitra plays a complementary role, as the supreme friend and protector of mankind. He is the sun and its light, all-seeing and truthful. To those conforming to his code, he is considerate and helpful. It is no

* C/f. Sanskrit blessing "Jivema saradas satam"

** Adonis is considered, by some scholars, as derived from *Adi Iswara* (First Lord), even as Adam is a corruption of *Adi-manushya* (First Man).

wonder that he became popular with the initiated and his highly specialised cult spread all over the Near East and Europe, in such a fashion that Mithraism would probably have become the dominant religion in Europe, had not Christianity, unexpectedly, broken its sway.

While obviously Indian in origin, Mithra* was adopted as a favourite god by the Pārāsikas, thus indicating that Mithra worship was common to the two groups, before they separated. In the Avesta, Mithra, (the Protector), became an Iazata; i.e., an angel of Ahura Mazda, and festivities in his honour, called Mithra-Khana, survived in Persia till the Arab invasion. With the spread of Persian power, the Mithra cult permeated all Persian-occupied areas, but the Greeks and the Romans thought of Mithra as an Indo-Aryan god, and tended to give him a Solar status. In Greek times, the Mithra cult was rather quiescent, (presumably because of the national dislike for the Persians,) but under Rome, after the first Century B.C., it became the rage, at least among the upper classes. It was treated as a 'mystery', with various grades of initiation and of ceremonial purification. Stern discipline and severe penances were imposed on the novices, who were bound by oaths of secrecy. It rapidly spread through the Roman army and among the merchants, particularly Asiatics. With the advance of Roman armies, the cult spread to the frontiers of the empire and reached Britain and Germany. In Rome itself, it continued in high favour with the patricians and enjoyed imperial patronage, mainly because of its monarchical bias. The cult reached its apogee in the third Century A.D., but its decline started when Rome lost its Asiatic possessions. Meanwhile, the followers of Christianity, (who were mainly recruited from the illiterate poor and the enslaved), became more aggressive and they overwhelmed the cult, when Emperor Constantine elected to become a Christian, in 323 A.D.

The cult has left behind numerous relics, in the shape of statues and chapels (speleca). In the statuary, Mithra was

* Mithra was known as the 'Protective Genius' in the script of the Khetas; he was also identified with the Sun, occasionally.

always represented as a youth, with a conical crown and flying drapery, and shown as slaying a sacred bull. He was also sculptured as riding a horse, and pursuing the bull in flight. The Mithra legend is also connected with a drought and a deluge; in the latter, only one man and some cattle escaped in a boat. In England, Mithra chapels have been unearthed at several places, one such in the very heart of London, dating about 300 A. D., thus evidencing the extensive propagation of the cult, even in the remote corners of the Roman Empire.* In Greek and Roman literature, there are numerous references to the cult; Lucian, in his 'Apulius, the Golden Ass,' describes how the cult was widely prevalent in Asia Minor and how images of Mithra were carried about in palanquins, by priests and bearers, some of whom were eunuchs. The wide distribution of the cult is strong evidence of the spread of Aryan mythology and religious practices into the Near East and Europe, following in the wake, doubtless, of migrating Aryan peoples, who were worshipping Mithra and allied deities. Toynbee has described Mithraism as "pre-Zoroastrian Persian paganism, in a Hellenic dress"; and Manichaeism as "Zoroastrianism in Christian dress". The following ideas and practices have, probably, been borrowed by Christianity from Mithraism; a miraculous birth or divine incarnation; a storied resurrection; immortality of the soul and a last judgement; treating Sunday as the holiday of the week, (Ravi-vār of the Hindus,); holding 25th December, (the day of the winter solstice festival among Pārāsikas and Hindus,) as the birthday of the founder; making use of the bell, holy book and the candle; and using holy water for purification.

* A Mithra temple has been found near Frankfort-on-Main.

NOTE TO CHAPTER VI

"THE PHILISTINES"

The Philistines figure prominently in Christian literature. They also appear in Egyptian history, of the Empire period. We hear, that in the time of Pharaoh Mane-Ptah, (or Merne-Ptah) some enemies, called vaguely the 'People of the Sea,' were threatening his empire's security. These people apparently came from Crete, wherefrom certain tribes, described as Shardana and Danauna, are mentioned as serving the Pharaoh as mercenary fighters, along with some others called Akhaivasha, Shakalsha and Tursha, all of which names seem to have an Aryan intonation. In the time of Ramesses III, a second raid on Egypt from the same 'People of the Sea' occurred; (circa, 1195 B.C.). Among those joining in this raid, are mentioned a tribe called Pulishta or Pileshti. (Later, Solomon called them Peleshtem). These Pulishta are identified by historians, with the Philistines of the Bible who, according to Christian texts, came over from Crete to the mainland of Asia Minor and conquered and occupied certain areas on the Mediterranean coast, which were subsequently known as Palestine.

The Philistines, (the 'People of the Sea' to the Egyptians,) were heavily defeated by Ramesses III and numerous prisoners were taken, according to the relief carvings, set up by the Emperor to commemorate his victory. After Ramesses III, Egypt declined in military power and international status; on the other hand, the Philistines recovered their political fortunes and were even able to overlord the Hebrews of Judah and Israel, (called Khabiru or Habiru by the Egyptians) for perhaps a century. Incidentally, they introduced the use of iron among the Jews, but severely restricted its availability to the Semitic population, as the Old Testament has recorded :

"Now, there is no smith found in all the land of Israel, for the Philistines said, 'lest the Hebrews make them swords or spears'.

All the Israelities went down to the
 Philistines to sharpen every man his
 share, his axe and his mattock.
 So it came to pass that in the day
 of battle, there was neither sword nor
 spear, found in the hand of the people,
 who were with Saul and Jonathan ”.

The struggle between the Aryan invaders and the native Semitics, is thus pictured by H. R. Hall, (in his “Ancient History of the Near East”).

“Israel saved her nationality and name, by retreat into the hill country and the sea coast was given up. A new oppressor had entered the land, more formidable than the Cannanites, with all their chariots of iron. The Israelites had never acknowledged a Cannanite master, but they were compelled to submit to the Philistines who, used to real mountain-fighting in their native Crete and Lycia, pursued the Hebrews to the mountain fastnesses. The superiority of their armature, their bronze-plated corselets, large round buckler, great broad sword and huge spear, over the the feebler Hebrew weapons, was so marked, that no further reason for their (Hebrew’s) complete subjugation need be sought. Possibly, the possession of iron weapons contributed materially to bring about the complete victory of the invaders. No attempt was made to make Philistine settlements inland,—Gath was the farthest inland, they ever reached.

“The Philistines were not native Cretans, but conquerors from Lycia (in Asia Minor), who were later expelled from Crete, or had to migrate. The Bible mentions them as wealthy, and possessing substantial architecture in palaces and temples. They had large theatres, full of noble statuary and accommodation for thousands, as the story of Samson reveals. The Philistine State was, essentially, a product of foreign military power, and depended on continued racial purity and energy; when these failed, the end was on hand. Soon they became “Semitized”, talking Hebrew ”.



TO FACE PAGE 223.

EGYPTIAN WALL PAINTING SHOWING A NAVAL FIGHT WITH
THE PHILISTINES

(Note the peculiar Haii-do of the Philistines)

Finally, Egypt again over-ran Palestine and the might of the Philistines was debilitated. After a rule of over a century, they were driven out of Israel by Saul. David then defeated the invaders in their own coastal homeland and captured their cities, amid much slaughter of the "uncircumcised."* The remaining Philistines took up service with the neighbouring kings. King David's slaying of Goliath, the Philistine, was only a symbol of Semitic resurgence. With the rise of Solomon, (who allied himself with Egypt and married Pharaoh Sishank's daughter,) Philistines became very subdued and ceased to trouble the Hebrew peoples. In a sense, they disappeared from the stage of history, but their cultural, industrial and ethnic contribution to this part of the world, was not inconsiderable.

It has been suggested, by some Indian historians, that these Philistines were none other than the descendants of a great Indian sage, called Pulastya, who figured often in post-Vedic literature and is mentioned in the Yajur Veda.** This rishi is said to have been a great grammarian, and to have preceded Pānini by many centuries. In the myths, a sage of the same name figures as a mind-born son of Brahma and one of the Sapta Rishis.‡ Apparently, the original home of the historic Pulastya was in Gāndhāra, (the country of Pānini,) but when and why he and his fellow nationals emigrated to Crete via Anatolia, is not known. Even the real name of the rishi is in doubt. Pulastya means, "one with hair worn braided or smooth"; apparently, this sage and his followers wore their hair in this fashion, instead of allowing it to get thickly matted (kapardin). It is curious that according to the Egyptian and the Biblical accounts, all Philistine people dressed their hair in this peculiar fashion, (thus lending some support to theory of the Indian origin of this tribe.) H. R. Hall thinks that the striking coiffure of the Philistines was

* The Jews, following the ancient Egyptians, practised circumcision.

** The Vedic literature prominently mentions 7 Brahmana families as figuring in traditional history viz., Bhrigu, Angiras, Marichi, Atri, Pulastya, Pulaha and Kratu; the last three did not produce true Brahmana stock. Pulastya was the forefather of Rakshasas, Vanaras, Kinnaras and Yakshas.

‡ The Sapta Rishis were: Marichi, Atri, Angiras, Pulastya, Pulaha, Kratu and Vasishtha.

the result of their working bird's feathers into their hair, in order to make the latter keep smooth.

In this connection, an interesting theory has been put forward by Dr. K. K. Pillai, (in his book, "South India & Ceylon"). Dr. Pillai feels that the name 'Palesgini': given by Megasthenes to the people of Ceylon, is suggestive of the appellation, 'Pelasgoi', given to the mysterious 'People of the Sea', by Greek writers. In Ceylon itself, the ancient capital of the Yakkas, (Skt. Yakhshas) was known as Pulastipura, (now known as Polonnaruwa)*. According to Dr. Pillai, the expression, Pulasti, is identical with that of Pulaseti, (or Pilesheti or Pulishta,) mentioned as one of the Peoples of the Sea, (Vide, Cambridge Ancient History, Vol. II, P. 284). Dr. Pillai also sees some connection between the Ceylonese tribal name Yakka (or Yaksha) and that of Akhi-wasa, mentioned in the Cambridge Ancient History, as one of the Peoples of the Sea, who hailed from Lycia in Asia Minor. (Dr. Pillai points out, that the original name of the Lycians was Termilai or Tremilai, which can be equated with Skt. 'Dramila', and South Indian 'Tamizha').

I have pointed out elsewhere, that the whole of Asia Minor and Syria, was full of Aryan peoples from about 2000 B.C. onwards and that there were several Aryan kingdoms, flourishing for centuries, in Anatolia and on the Mediterranean Coast. It is a reasonable assumption, that the Philistines were a branch of the minor Khēta peoples, who had migrated into Asia Minor, after the Assyrians over-ran the Aryan kingdoms in the Fertile Crescent and in Syria. Subsequently, the Philistines seem to have crossed over to Crete, from where, however, they were probably forced to emigrate again, because of the pressure from the Minoans. They landed later on the Syrian coast, and settled in the region, now known as Palestine, after some skirmishes with the Pharaohs, who held nominal sovereignty over the Syrian littoral.**

* The Mahavamsa calls Polannaruwa, "Pulaththi", i.e., Pulasti.

** In all probability the Pulastians (or Philistines), although of Vedic Aryan stock, had become 'Vratya', like the Panis, even while leaving Sapta Sindhu and immigrating into Anatolia. Homer, mentions in the Iliad that the Pelasgians fought on the side of the Trojans, whom Homer calls Dardanians—a name reminiscent of Darad, or north Kashmir.

By all accounts, the Philistines were a tall, fair and well-built race, the women being particularly handsome and full of grace. The Hebrews developed a peculiar fondness for Philistine brides, which is not very surprising, when we realise that these Aryan tribes were closely related to the Mithranis, whose women were famous for their beauty and learning, throughout the Near East. David descended to treachery, for the sake of obtaining an Aryan consort. Solomon, probably, had a number of Philistine spouses among the 700 wives and 300 concubines he is credited with, in the Old Testament. Samson, (who is described as a 'robust rogue,' by a recent American writer,)* had a penchant for Philistine women, among whom was the fair Delilah, who was his ultimate ruin. The Bible frequently mentions the Israelites as taking Philistine women into their household. The long nose, which we associate with the Semitic race is, probably, the result of this intense ethnical mixture of the Aryan and the Semitic, as remarked by Will Durant, whom I have cited elsewhere.

* In an article in the 'Life' magazine, Vol. 38, No. 7.

aborigines, now confined to the coastal hills, are heavy and hairy, with short arms and legs.*

Strangely enough, Dr. Hawkes classifies the Polynesians and the Micronesians, (with light to dusky complexion, wavy, black and lustrous hair, dark eyes and high bridged noses and well formed mouths with bright teeth) as a separate racial strain, but he is frank enough to cite the opinion of Dr. Bosch-Gimpera, "that many authors have included the Polynesians in the Europi-form group," an opinion, which I have strongly canvassed in these writings, by suggesting that the bulk of the inhabitants of ancient Polynesia were none other than Indo-Aryans, who had trekked eastward into the Pacific and the New World, in the early centuries of the Christian era.

* In "The Vedic Age", (Bharatiya Itihasa Samiti,) Dr. B.S. Guha holds the view, that a race called proto-Australoid came to India from the *West* and that they are the remote ancestors of the adivasis of India.

CHAPTER VII

THE ARGUMENTUM AD LINGUUM

In support of my thesis regarding the origins and early history of the Aryan race, I propose now, to deal with what I may be permitted to call, the 'linguistic argument'. Greatly condensed, the argument is this : assuming a common origin for a group of primitive languages, spoken by different ancient peoples in different areas, the degree of affinity of the spoken languages to the common or mother source will differ, in direct ratio to the distance travelled by the people concerned, from their original habitat, where the parent tongue was (or is) spoken. In other words, the longer the people (speaking the original tongue) travel over the earth, the less likely are they to retain the purity or other typical characteristics of the parent language. Those living nearest to the mother source will speak the dialect in its original form, and those farthest away, will utter the most corrupted descendant of the tongue. Of course, there may be exceptions to the rule ; for instance, a people may migrate to a distant and largely vacant country, with the specific object of settling there, (or be forced to do so, by pressure of circumstances) skipping the intervening lands, where they find no occasion to tarry. (This happened in the case of Lithuania, as I shall explain shortly) Or a migrating people may get 'submerged' in a numerically superior local population, although nearer the original homeland, while their cousins travelling a longer distance may still retain their own speech practically intact, because of the absence of resistance from local languages. The classical instances of these types will be the cases of the Aryans, who came to the Tamil Nad and of those who went further south to Ceylon. In Drāvidadēśa, the Prākṛit language could make but limited headway against well-established Tamil, spoken by a comparatively large population,* but in Ceylon, it was able to overwhelm the

* Modern Tamil contains a large, (a very large), percentage of Sanskrit-derived words. Much of the grammar and accidence of Tamil are also borrowed from Sanskrit.

petty aboriginal dialects and leave 'Sinhalese' (strongly based on Sanskrit), the undisputed master of the field,

Before I proceed to demonstrate my argument, it will be just as well if I briefly describe the grammar of languages, with special reference to Aryan tongues. Linguists have classified languages into three broad groups, for purposes of identification. The first is "flexional" or inflective; the second is 'agglutinative'; and the third, "isolating". A fourth category is also attempted, i.e., "polysynthetic", in which a word conveys an entire series of ideas and the distinction between a word and a sentence is often blurred. The examples of inflective languages, with noun casings and conjugated verbs, will be those derived from Indo-Aryan (assumed by me to be native to India), like Sanskrit, Latin, Greek, and Slovene. The classic example of 'agglutinative' speeches is Turkish and allied Turanian tongues, called Ural-Altaic. (The Romance languages also, have gradually tended to become agglutinative, as I shall shortly elucidate). As an instance of 'isolating' speech, Chinese may be cited. In the fourth category will be found some dialects of the Red Indians, where a single word, uttered by these highly taciturn people, will equal a long sentence, in import.

It is obvious that two opposing factors have influenced the ultimate morphology of widely dispersed languages. One is centripetal, which tends to maintain the similarity of the speeches, traceable to a common source. The other is centrifugal, and works towards modifications (in languages) arising out of local geography and history, facilities for trade and commerce, and contact with other peoples, etc. The Anglo-Saxon language, for example, is structurally the same in Great Britain and in America. Yet, linguists will see vast differences in its manner and application in the two continents, although the two speeches have been separated for less than two or three hundred years. This centrifugal trait is more noticeable in the ancient languages deriving from the same mother-source, since they tended to lose contact with the parent, and from each other, more easily in olden times, when travel and means of communication were extremely limited and local influences of climate and geography were much

stronger. It is indeed quite remarkable, that despite the strong fissiparous forces at work, certain allied languages have maintained their basic similarities, during the course of many centuries, and over widely separated areas.

The civilised tongues of the world can be classified broadly into three or four groups. The first is the Indo-Aryan, tracing its ancestry to the verbal communications of the people living in a common home (which was Sapta Sindhu, in my view), five or six thousand years ago. The second is the Semitic; and the third is Mongolian. Usually, a fourth is added, viz., the peculiar tongue called Ural-Altaic, spoken by the Finns, Hungarians and Turks. (I am not categorising, for obvious reasons, the various minor languages indigenous to the African and the American continents). To the Indo-Aryan group belong most of the major languages spoken in India and Pakistan, (except the so-called Dravidian tongues,) and all the languages of Europe, except Iberian and the Ural-Altaic. The Mongolian language dominates China, Japan and the Far East; Semitic is the speech of the Arabs, Jews and the North African peoples of various extractions. A word of caution, however, is necessary in this context. It is not as if all the above languages are hundred per cent pure; they have all borrowed from one another and in some cases, the admixture is heavy. Persian (a Sanskrit tongue) has more than 50% foreign words. Tamil (apparently, non-Indo-Aryan) has in its current usage, a very large number of words of Sanskrit origin. We know that Hindi, (a modern form of Prākṛit), has been seriously intruded upon by Arabic and Persian, (and to a small extent, English also). Apart from basic intermixture of languages, we have, what are known as 'loan-words' in most speeches; i.e., words known to be foreign, but used, nevertheless, for brevity, convenience or picturesque effect.

Each linguistic group has its own peculiarities but, even with in the same group, the language morphology may show marked differences. As I have said, the Indo-Aryan languages, (Sanskrit-based in my opinion), are generally inflective; i.e., the nouns have case endings (e.g., eight in the case of Sanskrit and six in the case of Greek and Latin); three genders and singular and plural

(and dual in some cases). But some languages in the same group, like English, have lost the inflective habit and become largely agglutinative, using a full array of pre-positions to qualify nouns. The un-related Semitic tongues have retained a dual which have been shed by most Sanskrit-derived speeches. The Romance languages (French, Spanish, Italian, Portuguese and Rumanian), although derived from the Latin of the Roman Empire, have completely lost their case-endings, while the Slavonic tongues, (Russian, Polish, Czech, Slovak and Bulgarian), still retain their noun inflexions, although they are remoter, in accident, to Sanskrit, than Romance. As regards verbal forms, the inflexional languages, (mainly Indo-European), regulate the use of verbs with reference to person, number, tense, mood and voice. The isolated languages, (Chinese, Malay etc.,) refuse to make any distinction in the verb itself, which remains immutable. In Chinese, one cannot say 'I write', 'I wrote', 'I will write'; one needs must say 'I write to-day', 'I write yesterday', 'I write tomorrow'. Japan, on the contrary, (having borrowed its alphabet and its religion from India), inflects the verbs, almost as in Sanskrit, and even improves on it by having negative conjugations; e.g., *Ikimasu* = to go ; *Ikimaseu* = not to go.

It is clear that, except for broad trends and basic structure, languages, even within the same ethnic group, can have infinite shades of form and finish, with the result that each speech, especially a growing one, becomes a law unto itself. Yet, by widely diverging devices, all languages manage to fulfil their fundamental function, which is the transfer of meaning from person to person ; (some individuals even manage to talk to themselves audibly, but this is usually considered to be a pathological condition). It looks almost as if man's speech travels on a line with himself. Man lives on diverse kinds of food ; he wears clothes of various types and makes, (including, in some cases, only birthday suits !) ; he travels by numerous means of transport and ekes out his living by an infinitude of vocations, (not excluding the art of the gentle touch). In the same fashion, he communicates with his fellow-beings by all sorts of vocal sounds, whether they cover or not, parts of speech, roots, inflexions and polysynthetic word-sentences. But, it will be a mistake to

say, that all speeches are alike in grace, and effectiveness, even as all transports, all dresses and all professions are not alike. In the ancient world, a language like Sanskrit (or its daughter, Greek), can plumb the depths or scale the heights of human emotion, and attain sublimities of prose and poetry, which few other contemporary writings could equal; similarly, modern French and English, (the languages, *par excellence*, of diplomacy and political oratory), are vehicles in which gifted word-smiths can cast powerful imageries of thought and expression, and in which the adepts can weave astonishingly beautiful tapestries of style and fancy.

To come to closer grip with the argument: the Indo-Aryan groups of languages, which are spoken by a majority of the world's population, can be listed as follows, with some statistics of their comparative importance to-day.

<i>Country</i>	<i>Modern Language</i>	<i>Ancient Language</i>	<i>Population using (the language : in approximate figures, in millions)</i>
India and Pakistan	Hindi, Hindustani, Bengali, Punjabi, Gujarathi, Marathi etc.	Sanskrit, Prākṛit and Pāli.	400
Persia and her neighbours.	Persian etc.	Avestan	50
North America, Australia, New Zealand, England etc.	English	Anglo-Saxon.	300
Portugal and South America	Portuguese	Romance	70
Spain & C. & S. America	Spanish	Romance	70

<i>Country</i>	<i>Modern Language</i>	<i>Ancient Language</i>	<i>Population using (the language in approximate figures, in millions)</i>
France, Belgium etc.	French	Romance	75
Austria, Germany, Switzerland etc.	German	Old German	140
Russia, Poland etc.	Russian Polish etc.	Old Slovene	160
Italy, etc.	Italian	Latin	60
Greece, Yugoslavia etc.	Greek	Old Greek	45
			<hr/> 1,370 <hr/>

The crux of my argument is, that almost all the above languages, which have an Indo-Aryan (i.e., Sanskrit) base, retain their affinity to the parent tongue in the direct ratio of their present contiguity to Āryāvarta, the original home of Sanskrit speech. It is true, that there are differences of opinion among Western pundits, regarding the exact degree of relationship between a particular Indo-Aryan language and its near relations. Naturally, these experts are unanimous that Sanskrit cannot be accepted as the mother of Indo-Aryan speech.* For my thesis, however, this assumption has to be made, since it is fundamental to the argument. In other words, to support my thesis that

* This school, however, concedes the existence, at a remote time, of a fountain source of all Indo-Aryan speeches. For instance, Max Muller in his famous 'Lectures on the Science of Languages,' (1861), observed that "there was a time when the first ancestors of the Indians, the Persians, the Greeks, the Romans, the Slavs, the Celts and the Germans were living together within the same enclosure, nay, under the same roof". Apropos of Sanskrit, he says (in his History of Sanskrit Literature — P. 14) "no other language has carried off so large a share of the common Aryan heir-loom, whether roots, grammar, words, myths, legend—it is natural to suppose that though, perhaps, the oldest member, the Hindu was the last to leave the Aryan family."

there was a pre-historic central home for the Aryan peoples and that this home lay, not in the dismal Caucasian steppes but in Āryāvarta, it is necessary to postulate a "mother of mother-tongues" (a sort of grandmother 'Vach'), which could only be Sanskrit or, at least, its colloquial variant.

There is universal agreement on the point that Sanskrit and Avesta are more closely united, than any other Indo-European languages. As I have remarked elsewhere, Avestan, (and Old Persian) are first cousins of Sanskrit; they are almost like the Tamil of the Tinnevely rustic and that of the Mylaporean. The former may lengthen his exclamations and resort to a Kerala-tinged patois, which strikes the Madras man as crude and ungraceful. The latter may strew his crisp utterances with such chaste (!) loan-words like, 'loose', 'doop', 'idea', 'bore', and 'jolly', which will make the Southerner wince at such noisome linguicide. But, both the speeches are the same, and so are Avestan and Prākṛit. But, it is one thing to find similarity and another to explain it. The European writers, barring to some extent the great Max Muller, are unwilling to concede that the Persians and the Indians might have, at one time lived together and then separated through acute religious dissension, like the Pilgrim Fathers of America. In any case, the Persians lived close to Āryāvarta and this proves my argument that their contiguity helped to preserve the comparative purity of their speech, *vis-a-vis*, Sanskrit.

When we move away from Old Persian, the best authorities are found to be in open conflict, regarding the degrees of relationship of the various speeches. Bopp maintained that the Slovene languages (Russian, Polish, Bulgarian, Slovak etc.), were most closely allied to Sanskrit, an opinion shared by Pott. Grimm, on the contrary, voted for German, and he was supported by Lottner, and Scheicher. Other experts tried to visualise a closer relation between Celtic and Latin and Greek, and through the latter to Sanskrit, thus establishing a South-European division of Indo-Aryan tongues, as a sort of counter-weight to the 'Slovene' school. While most scholars classed Greek with Latin, others,

such as Grassemann, pointed out striking peculiarities which Old Greek shared with Sanskrit and Latin did not. Conflict of opinion, thereupon, arose regarding the real relationship of Latin to Greek ; while many regarded these two, not only as sisters but as twins, others would not credit them with such close consanguinity, *vis-a-vis* other Indo-Aryan tongues. In the face of such divergent views, (supported, doubtless, by learned argumentation) the pundits found it difficult to establish well-defined conclusions, as e.g., whether the Greeks remained longer with the Indians and Persians or the Slovenes did so, (or perhaps the Germans and the Celts, as some authors thought). Max Muller felt quite nonplussed and decided that the problem defied scientific solution. To quote him, "All these languages sprang up, grew together and diverged, before they were finally separated ; some retained one form, others another, so that even the most distant members of the same family might, on certain points, preserve relics in common, which were lost in the other dialects, and vice versa."

Admitting the wide area of disagreement among scholars, it is still possible, in my humble opinion, to evolve a theory which, while not repugnant to the facts of the case, will yet be consistent with the thesis adumbrated by me. The well-established facts are ; (1) that all the Aryan dialects are closely connected with one another, (2) Sanskrit has the greatest claim to be treated as closest to the mother source, (3) that it was positively indigenous to India, (4) that Avestan and Sanskrit are like twins, (5) that after Avestan, Greek bears the closest resemblance to Sanskrit and the mother source, (6) that Latin and Greek bear the strongest similitude to each other and indirectly to Sanskrit and Avestan, (7) the so-called Romance languages (French, Spanish, Italian and Portuguese) are patently derived from Latin, (8) that after Avestan, Greek and Latin the Slovene tongues come nearest to the original source, German and Anglo-Saxon following in short order, (9) Lithuanian is an exceptional case, requiring some special elucidation of its peculiarities.

I have already explained the close association of Avestan with Sanskrit ; in fact, each language represents one side of the

same medal (c/f. the Dēva-Asura battles). Avestan must have proceeded from India, sometime after the Asura worshippers left our borders to found a new home and a new religion elsewhere; Greek comes next in the order of consanguinity. Who were the Greeks? Originally, the theory, in hot favour with the Westerners, was that they were a tall, blond race, who came to Hellas from the north, perhaps from the deep forests of Germany, the traditional home of the 'blonde beast'. This view has now been given up and it is generally admitted, that the Greeks came to the Aegean Sea area from Asia Minor, along the ancient trade routes linking the civilised lands of Babylonia, Syria and Anatolia, with the still semi-barbarian Europe of the 1st millennium B.C.

Round about 1000 B. C., these "fair haired Achaeans and the Danaoi,"* as Homer calls them, seem to have descended into Hellas from the East. Dr. Frank Stubbings, refuting the Central-European origin of these people, points out that the pottery used by them, (called Minyan), closely resembles the plain grey ware found at Troy. There is every evidence, says Dr. Stubbings, that these invaders came from Asia; and the "Northern Invaders" were merely a convenient philological hypothesis, now discarded. Leonard Cottrell arrives at the opinion, that the invasion of Greece, the establishment of Indo-Aryans in Syria, and the invasion of Egypt by the Hyksos, were all waves of one big westward movement of Indo-Aryan peoples, covering several centuries. In his opinion, the Greek myth of Zeus carrying off Europa, the daughter of a "Syrian" king allied to the Pharaohs, and getting a son called Minos by her, is probably an allegorical representation of the westward march of the Indo-Aryan nation into Greece from the Asiatic mainland, *via* the Hellespont. The invaders took with them, not only the language of the Aryans, but also, much of their mythology and folklore. As Woolley remarks, the influence of the Hurrio-Hittites on Greek religion was indeed most remarkable. For instance, the Greeks themselves were aware that the cult of Dionysis came from Asia; and that the Hesiodic theogony was, in part, derived from Anatolian sources; the legend of Zeus and Typhon was based on the story of

* C/f. Sanskrit: Danava.

Kumarpi, mentioned by the Khētas. To quote Woolley, "When we consider the haruspices of Etruria and Rome, and remember that the 'Flood Story' of the Genesis is definitely coloured by the Hurrian version of the Epic of Gilgamesh, we realise that, for the study of ancient religions, that of the Hurrians and the Hittites, has a peculiar value".* Apart from the principal Greek gods and goddesses, (each one of whom has an unmistakable Vedic prototype,) minor deities also show parallelism. I have already mentioned that Ushas was Greek Eos. She had other Vedic names like Arjuni, Brisiyā, Dahanā, Saramā and Saranyū; the Greeks made these into Argyroris, Briseis, Daphne, Helen, and Erinyes. In the Vedas, the wicked Panis tempted Saramā to be unfaithful to Indra. It has been suggested that Homer created Paris and Helen out of these Sanskrit names. Even Vrittra, the serpent-demon, is not left out. The Greeks have made him into Ortheros, the brother of Kerberos (the Vedic Sarvara), the guardian of Hades. Such instances could be multiplied, but this seems needless. I have already pointed out that the Greeks looked to the East for their old home and placed Mount Olympus in Asia Minor, a sure indication of the place of their immediate westward emigration. It is no wonder that, in the light of the above facts, the language spoken by these "fair-haired Achaeans" was closely related to other tongues current in Asia Minor, the Khēta, the Hurrian and the Mithrani**. We have already seen that these languages were a form of Prākṛit, and in their literary shape, strongly reminiscent of Sanskrit. I suggest, therefore, that the argument holds good, viz., the Greek language bears such a close relation to Sanskrit, because the Greek people ultimately came from regions not far from Āryāvarta, i. e., the Near Eastern territories, inhabited by Indo-Aryan tribes.

The story of Latin, naturally, comes next. According to Virgil, Rome was founded by Aeneas, a refugee from Troy, obviously, an Asiatic. The Latin tongue has been clearly derived from Asia Minor, and has been less affected by local influences, than even Greek. Many Latin words are phonetically truer to

* "Beginnings of Civilisation, Part II" in 'The Story of Mankind'.

** It may be recalled that Europa, the mother of Minos (Manu?) of Crete, was a Mithrani princess, as per the Greek legend.

Sanskrit than Greek, probably because the Greeks had a defective appreciation of phonetic values, and often twisted Aryan words out of shape, when transforming them into the local dialect. The Romans, on the contrary, caught the sonal values of Indo-Aryan speech correctly and gave their true equivalents in Latin. Latin and the Romance tongues give us, by far, the most unbroken record of language growth, outside India. From the 8th Century B. C., till now, this stream flows on, like a majestic river, whose course can well be followed by philologists. Written Latin dates only from 500 B. C., but its origin must, apparently, be traced to a group of Indo-Aryan settlers, who probably came, not over the Alps, but by sea. At first, it was the language of a small body of men, settled at the mouth of the Tiber, which fact lends support to the story put out by Virgil. There were other people in the neighbourhood, who spoke a similar tongue, unmistakably as Indo-Aryan as Latin itself; (the Etruscans appear to have spoken a near-Aryan language, but their script is still undeciphered). Latin had a bitter struggle for survival, but by the middle of the 3rd Century B. C., it had attained dominance in Italy. From the very first, Latin showed all the morphological characteristics of Sanskrit, with case endings and verbal terminations, long and short vowels, and a good many compound letters or diphthongs. With the growth of Roman power, the use of Latin spread rapidly and the language itself got refined and took on its classical form, borrowing much from the more polished Greek, and attaining its brilliant finish by 100 B.C.. Classical Latin is overwhelmingly like Sanskrit in structure and syntax, with an abundant vocabulary, capable of dealing with the loftiest poetic and philosophic thoughts and the most intricate shades of legal and juridical disputation. That classical Latin was also the language of the bulk of the people, cannot be doubted; in the same way, Sanskrit remained the speech of the cultured, for ages in India.* The story of the origin and growth

* In ancient times, colloquial versions of Sanskrit like Prakrit, Pali and Paisachi were spoken all over Aryavarta; it is no accident that modern Kashmiri (in the extreme north) and Malayalam (in the farthest south) contain the largest percentage of Sanskrit words. It is not without significance that Asoka broad-cast his edicts, in Pali language & Brahmi script, all over Greater India. Of course, the upper classes all spoke Skt, vide Keith. Hist. of Skt Lit., P. 9.

of Latin, in fact, is the story of the onward march of the Aryan peoples into the Mediterranean regions, beyond Greece.

Let us now examine the Slovene languages (Russian, Polish, Czech, Bulgarian and Slovak). These, (unlike the Romance and the Germanic tongues), present a conservative and archaic aspect in line with what were the well-known features of the original Indo-Aryan speech. In other words, while classical Latin and Greek have got modernised (and divided into several tongues), the Slavonic speech has continued to remain roughly constant through the ages. The transition, from the synthetic to the analytical morphology, did not occur in the Slovak tongues, as in Latin and Germanic speeches. They retain full inflectional traits for nouns (with seven cases), the verb-system following suit. A complete set of consonants exists, as in Sanskrit, including one which sounds very much like Tamil "Zha". In their vocabulary, the Slovene languages retain a large part of their Aryan heritage. Numerous words are identical with Sanskrit ; a few examples can be given :

<i>Russian</i>	<i>Sanskrit</i>	<i>English</i>
Dever	Dēvar	Brother-in-law
Vidova	Vidhavā	Widow
Gospodin	Gōpa, Gōpati	Lord (master of cow)
Dome	Dhamā	House (Latin, domus)
Dati	Dēti	Gives
Vidyat	Vidyat	See or perceive (Skt : Vid = to perceive, to recognise)
Ogan	Agni	Fire
Nyebo	Nabha	Sky
Nocht	Naktā	Night
Novy	Nava	New
Baroda	Purōda	Bread
Dyen	Dina	Day

<i>Russian</i>	<i>Sanskrit</i>	<i>English</i>
Brov	Bhruva	Brow
Mysh	Mūshaka	Mouse
Karotky	Kirāta	Harsh, Curt
Māth	Mātā	Mother
Brāth	Brātā	Brother
Syn	Sūnu	Son
Docher	Duhitr	Daughter
Voda (Vodka* = little water)	Vāja	Water
Seto	Sata	Hundred
Priyat	Priyam	Gladness
Nyet (of U.N.O. fame !)	Nēti	Not so
Govyadina	Gavyādinā	Coming from a cow (beef, milk etc.)

Russian appears complicated to beginners, because like Latin and classical Greek, (and unlike other modern languages), it has remained conservative to its Indo-Aryan traditions. It provides a living shop window, through which one can gaze at the morphology of ancient (and dead) languages. From its present appearance, Slovene stands midway between Greek and Latin, so far as its affinity to the original mother tongue is concerned ; i.e., it is nearer Sanskrit than Latin, but less so than Greek. According to my formula, the infiltration of Aryan influences into Russia etc., must have taken place after the Aryan migration into Greece, but probably before the rise of Latin. Geographically also, Russia is farther away, via., Hellespont, than Greece,** from the Aryan seed ground, but nearer than Rome.

* Often 'no water', when drunk !

** Especially Asiatic Greece.

I had mentioned, elsewhere, that the case of Lithuanian was *sui generis*. This tongue, mainly of three million peaceful peasants, has changed little during 2500 years or more, (unlike its neighbours, such as the Scandinavian). It is the one modern language which is closest to the original "grandmother vach" i.e., Sanskrit and is, therefore somewhat remote even from the Slovene dialects, surrounding it. While the Czars mercilessly repressed the minority languages, the Soviet policy has been to encourage them; about 70 languages are officially recognised and subsidised in the U.S.S.R., Lithuanian, (together with allied Lettish, spoken by two millions,) retains all the Sanskrit inflections, and strangely enough, the pitch and accent usually associated with our classical language, especially in the sonorous Vedic chants. It is estimated that while literary Russian has about 30 to 40% words of Sanskrit origin, the percentage in Lithuanian and Lettish is higher, perhaps, as high as 60.

There is an explanation for this and it is as follows : I had referred, elsewhere, to the voyage made about 1000 B.C., by a large group of Asuras; i.e., Parasikas, under the leadership of Yima (Yama), from Ariyāna Bījō, (the seed ground of the Aryan race,) to the circumpolar region, perhaps under pressure from the Dēva-worshippers or perhaps because the beehive was getting crowded. There are several gathas (songs) in the Avesta, referring to this long trek towards the Far North, up to a place where the Sun shone for six months and where there was utter darkness for the rest of the year. The Avesta implies that, after some time, the adventurers retreated south a little and established a large colony, in an area congenial for agriculture and cattle raising. This colony is, probably, Lithuania/Latvia, where the original inhabitants appear to have multiplied and grown into small nations, whose ancient gods were Aryan deities, and whose languages, still, very closely resemble the Avestan, which is itself a first cousin of Sanskrit. It may be of interest to mention here, that the Avesta indicates another northern region, to which Yima's followers journeyed, but in an opposite direction. It is considered that this incident refers to the migration of a large body of Persians, some time after 1000 B.C., to the region now called Outer Mongolia. It is a fact that

the language of this small Mongolian nation is unlike that of its neighbours, and contains a considerable admixture of Sanskrit words, while a *soupcou* of Vedic deities mingles with the Buddhist divinities venerated by the people. Strength is lent to the above suggestion of an Aryan settlement in this remote corner of north-east Asia, by the discovery, in Outer Mongolia, of archaeological remains of a typically Persian character. At Gorny Altai, about 50 miles from the Outer Mongolian frontier, were discovered certain imposing underground tombs, which had been partly despoiled, but which had remained in perfect preservation, for over 2500 years, by the formation of perpetual ice in the subterranean chambers. In one tomb was found a human couple, embalmed and supplied with bowls of food, tables, chairs, cushions, embroidered clothes and riding and drawing harness, weapons and musical instruments. In the outer chamber, were found a dozen horses, (all deliberately killed), with a large wheeled chariot on spoked wheels, to be drawn by two horses, with two out-runners attached by traces. What is very significant, is the finding, in wonderful condition, of carpets of Persian manufacture and design, probably of the date, 800 B.C.; (Babylon and Nineveh were great carpet making centres, even in Xenophons's time, 5th century B.C.). Persian tapestries, presumably for royal use, were also found in good preservation, with designs based on Avestan incidents. These discoveries go to confirm the story of a Persian migration in the direction of Eastern Siberia.

To sum up : In this chapter, I have tried to prove that a study of the languages, constituting the Indo-Aryan group, unmistakably shows the mother-source of these languages to have been originally located to the east of Persia, which means really Sapta Sindhu (consisting of Bactriana, Afghanistan, Khotan, Baluchistan, and the whole of the Indus River basin), and the language concerned could have been none other than Sanskrit, or its commonly spoken version. The Western savants have, perforce, to concede the necessity for an original linguistic mother source, which they vaguely place in the "Caucasian steppes".*

* A slightly different view is voiced by Burrow, vide Note at the end of this Chapter.

They have however been unable to identify such a language anywhere near this region, supposedly the cradle of the Aryan race. If such a language had existed, it should now be spoken, in some form or other, by the people living there and it should have retained its original structure and shape, undistorted by the passage of centuries. The fact that there is no such language round about the Caspian and Black Sea areas, and that, on the contrary, there is such a language in the near proximity in Āryāvarta, confirms, in my opinion, the impeccability of the case for Sanskrit to be accepted as the "grand-mother vach" of the Indo-Aryan group of languages. On this theory, the Indo-Aryans would be autochthonous to Sapta Sindhu, and their subsequent wanderings would all have been *outward* from this original seed-ground of the race.

It seems to me also, that, in the murky vistas of pre-history, the "memory of the race", should be a guiding light. Indians have no tradition of a foreign home outside Āryāvarta. To quote Muir, a distinguished Indologist, "I must however begin with a candid admission that, so far as I know, none of the Sanskrit books, not even the most ancient, contains any distinct reference or allusion to the foreign origin of the Indians". I hope, in my humble way, I have brought home the truth, underlying the above observation, to the enlightened reader.

NOTE TO CHAPTER VII

‘THE ORIGINS OF SANSKRIT’

I have referred repeatedly, in these writings, to the ‘Western’ school of thought, which belittles the antiquity of Indian Vedic literature, and its medium, the Sanskrit language. A typical representative of this school is Dr. T. Burrow, till recently Professor of Sanskrit at the Oxford University. The reader, familiar with my own thesis, will doubtless be interested in having an idea of the basic concepts of this ‘hard-core Occidentalists’, as elaborated in his book, “The Sanskrit Language”.

To Prof. Burrow, the Sanskrit language is only 3000 years old and it is essentially an idiom alien to Āryāvarta. It is no doubt related to the Avestan, but both are descended from a common mother, whose characteristics can be gauged by a study, of not only Sanskrit and Avestan, but also of the large family of other Indo-European speeches - Burrow concedes that old Iranian and Sanskrit are so close, that “it is possible to find verses in the oldest Avestan which, simply by phonetic substitution according to established laws, can be turned into intelligible Sanskrit. A great part of the vocabulary is common to both these languages”

Prof. Burrow holds that Indo-Iranian (i.e., Sanskrit-Avestan) is only a part of the great Indo-European linguist-family. He would divide the latter into the familiar Satem and Centum groups*; into the former, would go Avestan and Sanskrit (Indo-Iranian) and Gothic (i.e., Lettish-Lithuanian, old Prussian, Slavonic), the Armenian and Albanian languages. The second category would be comprised of Greek, Latin, Celtic, Germanic and Tocharian, (the last being the language in which the Buddhists

* To explain: Certain members of the Indo-European linguistic family call a *hundred* Satem (as in Sanskrit); others use the word Centum; (all those travelling west-ward into Europe, use the latter word).

manuscripts of Chinese Turkestan were compiled).^{*} Claiming that the Indo-European languages formed the vast majority of the cultivated tongues of mankind, he contends that the early theories ascribing an original Asiatic home to these languages was misconceived, "because of the exaggerated importance given to Sanskrit". In his view, there is not the slightest trace that the ancestors of the Germans, Celts, Greeks and other European members of the (Indo-European) family were ever in this area, (i. e. Asia). "Consequently, it is now held that the original home, (of the mother source of these tongues) lay somewhere in Europe, since it is here, that the greatest number of these languages is found. It is true that the discovery of some Tocharian dialects in Chinese Turkestan has modified the picture and has led some to think again of an Asiatic home. But one such dialect is insufficient (for this purpose); further the nature of Tocharian shows that it has travelled far from its home. We may conclude that these languages, (Hittite, Tocharian), have been brought in by invaders and the direction of invasion must have been *from the West, via the Hellespont*".^{**}

Prof. Burrow firmly believes that Greece and Italy were colonised from the north by Germanic peoples, who also occupied France and the British Isles, in the 5th Century B.C. "It is probable that all Europe had been occupied by various Indo-European dialects by the time of the Indo-Iranian migration; when the Indo-Iranians set off on their migration from Europe in circa 2000 B. C., they took with them no Indo-European dialect but only Indo-Iranian which had already assumed its essential features in the original European home-land". In this assumption, it is essential, says Dr. Burrow, to push further back the date of the Indo-European languages than has hitherto been done. "The mother source, common to all the Indo-

^{*} Khotan and Chinese Turkestan have been called "the hinterland of India" by Sir M. A. Stein. For thousands of years, Indian language and literature held sway in this area and faded out only after the 11th Century A.D. (Sir M. A. Stein, "Ancient Khotan" and "Ser-India"). Tocharian bears a strong resemblance to Paisachi-Kashmiri and is obviously a degenerate form of Sanskrit.

^{**} *Italics mine.*

European dialects, lies long behind the earliest period which can be reached by any comparison. The separation of Hittite from Indo-European must have taken place earliest of all, since there is great difference between Indo-European and Hittite".

In his anxiety not to over-emphasise the antiquity or dominance of Sanskrit, Prof. Burrow has, I suggest, swung too far to the other extreme. His theory of a 'northern invasion' of Greece and Italy, (by the Germanic peoples, debouching out of the Black Forests,) has now been given up, in the face of overwhelming evidence to the contrary, even by the ardent protagonists of an original European home for the mother source of Indo-European languages. Prof. Burrow's suggestion that the Indo-Iranian languages, (Sanskrit and Avestan), marched out of 'Mittel Europa' about 2000 B.C., well formed and set, sounds somewhat startling, when we view it against the background of the cultural level inside Europe, about 2000 B.C. Literature and language are essentially a mirror of civilisation; they directly, and more so indirectly, reflect the material and moral level of culture attained by the people concerned. We have seen how the Indo-Aryans, speaking both the chaste Sanskrit and the vulgar Prākṛit, had reached a comparatively high stage of cultural advancement even in the Rig Vedic-age, as I have described elsewhere in these writings. Sanskrit itself had undergone such a degree of purification and refinement, particularly in its poetical application, that the name of 'Samskrita' given to it, seemed well justified.* In the language of the great philologist, Mario Pei, ("The Story of Language"). "The antiquated form of Sanskrit, in which the Vedic hymns were composed, may go back as far as 2000 B.C. or there about, definitely ante-dating Latin, Greek and Avestan, by many centuries. It is a hieratic, symmetrical, highly inflected tongue and displays the original Indo-European structure better than any other known tongue *with the possible exception of Lithuanian*".** The Sanskrit language

* "Some verses in the Vedas," says Max Muller, "can find a place among the best poetry of the world," The sukta addressed to Ushas in the Rig Veda, and that to Mother Earth in the Atharvan, are mentioned by him, particularly.

** Italics mine.

was accented, with a musical pitch built into it, with well defined vocal quantities and a multitude of consonants, hard and soft, aspirated, and non-aspirated, eight cases, adequate conjugations, and an abundance of tense, mood, voice and aspect. It was (and still is) one of the most finished vehicles of human expression, ever perfected by man.* And if we are to believe Prof. Burrow, such a language emerged out of the dense obscurity of the Black Forest regions, in 2000 B.C., and made its rapid progress towards Sapta Sindu, dropping on its way the imperfectly finished and somewhat inadequate dialects, like the Albanian, the Armenian, and the Tocharian, (not to mention the various Slovene speeches and Old Iranian).

What was the state of civilisation in Mittel Europa in circa 2000 B.C.? (This question is pertinent, since the highly evolved Sanskrit is supposed to have been born, bred up, and launched into the world, with an eastern orientation, about this time). Frankly, we know little about the culture of Central Europe in 2000 B.C. and the reason is obvious; the whole region was a cultural desert, blanketed over by a miasma of ignorance and savagery. The human population was small and hemmed in by adverse forces of nature. Such scattered and primitive inhabitants as inhabited inner Europe at this epoch had not reached even the Neolithic stage of living and were probably akin to the aboriginal Iberians, a small Hamitic race, which had perhaps moved in from North Africa in the remote past. They were succeeded by the Cro-magnons ("probably an Asiatic people" says Dr. A. C. Das),** who entered Europe from the East; they were brachycephalic but carried an Aryan speech which was imposed on the aboriginal population, along with a Neolithic culture, which remained undisturbed till, perhaps, 1500 B. C. These Cro-magnons had no knowledge of metals, or industry, or agriculture and had none of the cultivated habits of life, which

* The Sanskrit alphabet has also been admitted by all linguists, to be the most highly perfected of all the alphabets in the world; its only possible defect is the inherent 'ah' in the consonants, which 'defect' has been eliminated in Hindi.

* Rig Vedic India.

we notice so strongly among the Rig Vedic Aryans.* The Germanic tribes lived in rude wattle huts, often located on the branches of trees; or they dwelt under ground, like troglodytes, in pits and caves. They wore little clothing or ornament, and cannibalism was not a rare phenomenon in their society. Hunting and fishing sustained their livelihood, while systematic cultivation was unknown to them, even as the practice of animal

* Including the use of media of exchange for trade. To quote from The Ancient World, Vol. I, P. 137, "Eventually, however, metal became a third commodity of determinate value within each transaction. It was the easiest commodity to sell, being accepted by everyone; it was divisible with precision into any fractions one wished; it could be conserved without difficulty and was of limited weight. Here too, many systems gradually evolved, more or less independently of one another. But one of the first stages consisted in fixing the weight and quantity of metal, required for the purchase of a commodity, whether in gold, electrum, silver, or bronze.

"This process started early in India, but was slow in progressing. Already the hymns of the Rig Veda recognize some units of exchange. One of them is the cow. Another seems to have been a gold chain called *nishka*. Later Vedic texts mention lenders (*kusidin*) and loans, but no coins proper came, as yet, into use; the nearest approach to it was the quasi-monetary employ by merchants, of the *satamana*, a piece of gold weighing 100 *mana* or *krnsala*."

"As early as the Rig Veda, traces are seen of the use of the *nishka*, as a currency, for a singer (*rishi*) celebrates the receipt of 100 *nishkas*; he would hardly require 100 *nishkas* for personal adornment. Later, the use of the *nishka* as a currency is quite clear." (Vedic Index I-455).

It may be added, the *nishka* "was a gold coin of different values, but generally taken to be equal to one *karsha* or *suvarna* of 16 *mashas*." *Nishka* was also a necklace of small round silver (or gold) pieces strung together. "The *nishka* had become, (in later Vedic literature) a unit of value (Vide, Rig Veda, I, 126). The haggling of the market, already known in the Rig Vedic age, had now become a pronounced feature of commerce." (The Vedic Age P. 561).

It may be remembered that Vedic sacrifices, frequently, stipulated the payment of "dakshina" in gold pieces. The *nishka* or *suvarna* is likely to have been used on these occasions from very ancient times. When the *Brahmanas* mention the gift of 1000 or 10000 'cows', it is probable that so many *suvarnas* were meant. [The dones could do little with thousands of cows. Trading in animals, or milk and butter, was taboo to *Brahmins*.] The *Brahadaranyaka Upanishad* mentions how, King *Janaka* gave *Yagna-valkya* a thousand cows with 5 *padas* of gold tied to the horn of each cow. In the time of Buddha, five *masakas* were equal to one *pada*, which itself was a fraction of a *suvarna*, the latter weighing 176 grains Troy, according to Wilson.

domestication (except, perhaps, for the dog). They knew no poetry, grammar, etymology, mathematics, starlore, or medicine. They were strangers even to the very rudiments of the art of writing and had made no progress in the crafts and sciences of life. Yet, it is claimed by the ponderous German learning, (which captivated not a few of the Indian and British historians,) that these mid-European tribes, living on the threshold of savagery, were the contemporaneous progenitors of the Indo-Iranian nation, a nation which allegedly carried a cultivated tongue* and a highly developed civilisation into the Near East and into Aryāvarta, about 2000 B.C.!

Between the 'purified' Aryan speech and the rude Germanic dialects, there was absolutely nothing comparable.** Historically the latter appeared on the world's scenes very late, compared with their European conferers, Greek, Latin, and Slovene. There were no written records in Germanic till the 3rd or 4th Century A.D.,† a date on which the Indo-Aryans were setting up, thousands of miles from the Indian shores, their Far Eastern monuments, containing inscriptions in fluent and flowery Sanskrit! All these tongues (Germanic, or Teutonic) began to appear in satisfactorily recorded form only between the 7th and 9th century A.D. (Scandinavian records do not begin till the 11th or 12th century). It will be a safe assumption that in 2000 B.C., the natives of Mittal Europa were leading a kitchen-midden style

* There are 32 kinds of metres used in Rig Vedic poetry alone. Vedic prose is full of rhetoric and figures of speech. "The Samaveda is a standing monument to the wonderful skill and originality of the ancients in the science of vocal music." (The Vedic Age. P. 456).

** Even modern German is poles asunder from Sanskrit, which latter is a language in which it is difficult to be coarse, degenerate, scabrous or downright abusive. Goethe said this of his mother tongue: "If a German speaks to you softly and without truculence, he is probably lying."

† "The first epigraphic records of the Germans, in the Runic alphabet, which originated probably with the North Etruscans, go back only to the 3rd century A.D. (The Ancient World, I, P. 79).

of existence, and uttering only the primitive and unformed dialects, known to such aboriginals.*

To quote Mario Pei, "It is supposed that in pre-historic times the speakers of the original Indo-European parent language formed one closely-knit group and that by successive waves of migration, bodies of speakers detached themselves from the original home-land, losing contact with each other and allowing their speech to form into a dialect of the original, still recognizable as coming from one source but becoming more and more differentiated as time wore on. The modern (spoken) language which is supposed to be closest to the parent Indo-European speech, is Lithuanian".** In the light of this learned verdict, it is for the intelligent reader to guess whether the original parent language should be looked for in Āryāvarta, or whether it should be traced to the Black Forest regions of Germany. Even Hitler who would have, doubtless, given a few years of his troubled life to locate the original Aryan home round about his beloved Bavarian Alps, had to accept the verdict of his thorough-going researchers: that the Aryan homeland was, earliest of all, near the Kashmir Valley.

To strengthen my observations outlined above, I adduce the following further remarks :

(1) The following flora and fauna, (to name a selected few) found in the Vedas, are quite foreign to the Europe of 2000/1500

* It may be incidentally added that a language is not likely to acquire refinements (like a dual or three genders) after travelling far from its mother base. The process will be just the reverse and this is seen in the Indo-European languages, which have travelled away from Sapta Sindhu; as described elsewhere, some have dropped the dual and some the neuter gender. Some have fewer cases and several have even abandoned their inflective habits, and become agglutinative.

** Mario Pei has overlooked Sanskrit and Avestan because they are no longer spoken; and Persian and Hindi because they have travelled too far from their parents, i.e., Old Iranian and Prakrit. It may be added that Lithuanian has continued to remain archaic and undeveloped; there is not much of Lithuanian literature, which is understandable.

B.C. from where the Aryans started marching east, according to Dr. Burrow. *Fauna*: the monkey, the lion, the tiger, the elephant, the ape, the camel, the rhino, the crocodile, the panther, the peacock, the buffalo, the boa-constrictor. *Flora*: the blue lotus, the tamarind, the ficus (various varieties), myrobalam, the wood apple, the jambu tree, the pundarika or red lotus, the bamboo, the mustard, naladha, and manjustha, sana (hemp), the sesame (tila), karira, rice (various species), many tropical beans and last, but not the least, the Sōma plant and its permissible substitutes.* There is absolutely no indication in the Vedas, of any plants or animals, exclusively European by habitat. It may be added, *apropos* of the 'Russian steppes' theory, that there were no humped cattle, elephants and buffaloes in the Black Sea or Caspian Sea areas. The Rig Veda mentions these animals as long domesticated companions of the Aryan peoples, *ab initio*.**

(2) To quote from the Vedic Age, (P. 216), "Linguistic affinities are not positive proofs of Aryan immigration (into India). Vedic Sanskrit has the largest number of vocables in the Aryan languages. If the pre-Vedic Aryan language was spoken in different parts of Europe and Asia, where the Aryans had settled before coming to India, how is it that only a few vocables are left in the present day speech of those parts, while the largest number of them is found in the distant places of ultimate settlement and racial admixture, i.e., India? This disparity can easily be explained if the pre-Vedic (dialect) was the language of the home-land of the Aryans, and the other Aryan tongues came into existence as a result of the contact between migrating Aryans and non-Aryan elements, outside India and Persia."

(3) Again: What was the state of civilisation in middle Europe in circa 2000 B.C? To quote: [The Ancient World I] "East of the Rhine, pastoral groups armed with stone battle-axes spread widely, burying their dead everywhere in single graves. They issued (into Europe) from the lands, between the Vistula

* Patanjali permits Putika grass as a substitute for the Soma; but he says that the latter had not become extinct in his time, (I 1(56).

** It must have taken the Indo-Aryans many hundreds of years to domesticate the elephant, which was used in Vedic fights.

and the Baltic and the Dneiper. There were spreads in several directions, with differences in the style of (stone) battle axes and pottery. To the south, (others) moved into Central Europe and some few penetrated as far as Greece. In the Rhenish area, they came into contact with powerfully built, broad-headed bowmen, with bell-shaped beaker pottery. The Beaker folks seem to have spread immediately from Iberia". It will be seen that, by the era in question, Central Europe had not emerged from a late Neolithic state. using mostly stone implements and bones of animals. To quote further, from the same source. "Until the intensified working of the East Alpine copper mines had began to cheapen metal, the spread of tin-bronze metallurgy had only a limited effect on the peasant and pastoral societies of pre-historic Europe. The broad patterns of Neolithic cultures persisted. Flint stone, bone and wood continued to be the most important materials and few important appliances came into use at the time (1600 B.C.)." [pp. 148/149. Ibid).

Sir L. Woolley, (who is not very illiberal in his assessment of European culture in pre-historic times,) has this to say of Europe at the close of the Bronze age (1250 B.C.). "The fact is that we do not know who any of these people (in Europe, in the 2nd millennium B.C.) were. But, the more we study their material remains, the more are we forced to recognise, that none of these tribes made any original contribution to the progress of mankind. Starting as savages, they did better themselves by borrowed arts but they never invented anything that was new or to the general good. Their pre-history only acquires significance after they have achieved historic stature. They showed promise, perhaps, but not performance". (Page 828, *Beginnings of Civilisation*, pt. II).

I may also add here, the ancient verdict of Dr. I Taylor ("Origin of the Aryans", Pages 212-243). "It is not probable that the dolicho-cephalic savages of the kitchen-middens or the dolicho-cephalic cannibals who buried (their dead) in the caves of Southern and Western Europe, could have Aryanised Europe. It is an easier hypothesis to suppose that the dolicho-cephalic savages of the Baltic coast acquired Aryan speech from their

brachy-cephalic neighbours, the Lithuanians, than to suppose that in a remote age, they succeeded in Aryanising the Hindus the Romans and the Greeks.”*

And lastly the astronomical evidence, as derived from the earliest literature of the world (the Vedas) is over-whelmingly against Dr. Burrow. To cite Cunningham, (“Book of Indian Eras”. Pp. 2 et seq.), apropos of the star-lore of our ancients :

“In the hymns of the Rig Veda the sun’s annual course is described as well as the three major seasons. The solar year was clearly fixed. The intercalary or 13th month is very plainly alluded to (R. V, I 65). As Max Muller notes: “In the Yajur Veda, the 13th month has already changed into a deity (Vajas. Samhita vii. 31). The Brahmanas like-wise mention the 13th month and the theory of inter-calation is fully explained in the (Vedanga) Jyotisha. It seems certain that the intercalary month was well-known as early as the Vedic period. Each year of the 5 year lustrum had a separate name. As early as the time of the Yajur Veda the whole system of lunar months and of intercalary months to adapt the lunar months to solar reckoning, had already been established”. Does Dr. Burrow claim that this astronomical expertise was known to Europe of 2000 B.C.?

* “Even by the 1st Century B.C., the peoples of Western Europe had not emerged from savagery. Referring to the people of northern Gaul and Britain, Caius Volusenus, (the envoy of Julius Ceasar) wrote as follows :

“All dye their bodies with woad which produces a blue colour and gives them a terrifying appearance. They wear animal skins and grow their hairs long. Wives are shared between groups of ten or twelve men, especially between brothers and between fathers and sons but the off-springs are counted as the children of the man with whom a particular woman cohabited first.”—Human sacrifices were of common occurrence and cannibalism was prevalent—both in the Islands and in the adjacent mainland of Europe.

CHAPTER VIII

SOME REFLECTIONS ON THE 'INDUS-VALLEY' CULTURE

The expression, 'Indus-Vally Culture,' is somewhat misleading as I had pointed out elsewhere; the civilisation covered by this phrase extends far beyond the confines of the Indus-Valley, (unlike the cultures of the Nile Valley and of the Twin Rivers). It traverses the north and the south of Baluchistan, (Dabarkot, Periano-gundai, Kulli, and Mehi). Evidences of the culture have been found at such widely separated places like Buxar and Pataliputra in Bihar, and Kotla Nihangkhan in the Ambala District. In Kathiawar, numerous Harappan sites have been unearthed and Ujjaini has also produced slightly similar evidences. In fact, it could be stated that the culture spread over practically the whole of Sind, the Punjab, Baluchistan, lower Afghanistan, the North West Frontier Province, and part of the Gangetic basin. In the South, it had reached down to lower Gujarat. The old theories of the official archaeologists, identifying the culture with certain (Dravidian?) tribes, supposed to have been inhabiting Baluchistan and Sind, have now to be clearly abandoned.

The main features of this culture are too well known to need an elaborate sketch. It was mainly urban or at least centred round important townships.* With-well planned and accurately laid out

* This observation should not be misunderstood. A culture ranging from the foot of the Simla Hills to Karachi and from Sutkagandor to Rangpur, covering perhaps a million square miles, cannot all be urban. It is a civilisation "which responded to the challenge and the opportunity of great river plains flanked by vast highland regions." Much of the culture area must have been rural, but with a strong urban out-look. In later times, the Janapada and the Vishaya (something like city-states) became a common feature of Aryan society. In the Punjab alone, there were over 500 small cities in circa 1000 B.C.. Panini lists several hundreds of Janapadas.

streets, it evidences "a prosperous bourgeois economy as in Crete".* Elaborate bathing, watering and drainage systems bespoke a high degree of public health and of personal hygiene. The architecture was generally plain and utilitarian, abounding in scientifically executed brick work, (English-bond, with alternate headers and stretchers), and without much use of stone. Houses of substantial, even palatial, size were inter-mingled with those of humble workmen. The true arch was not known (unlike in Egypt), but corbelling was extensively resorted to. The public baths, the large granaries, the absence of city fortifications,** the broad straight streets, the commodious rooms with wide court yards, evidenced the desire for a comfortable, rather than for a highly sophisticated or secure life. Every house had a separate bath-room, the kitchen being in a sheltered corner. Stairways were of solid masonry and the latrines were probably at the top of the houses. (a practice quite familiar, even now, in the Punjab). The roofs were flat and supported by wood. The elaborate drainage work was unlike anything found elsewhere in the ancient world. House drains connected with lane drains, and these led to large-size street drains, (well covered and provided with inspection pits and nicely gradiented), which fell into the river through great culverts. No specific religious buildings have been found, but there is a suggestion of college halls or monasteries. The great bath (40' x 24') "would do credit to a modern sea-side hotel;" it was surrounded by flights of steps, The bath had been made water-tight by bricks-on-edge being laid on gypsum, with damp-proof bitumen. A vaulted culvert filled and emptied the bath—A special feature was the presence of hamams (or hot air baths), so common in Kashmir and the Himalayan Valleys, even today.†

* The quotations are from Bhavan Publication "The Vedic Age" (Dr. Pusalkar), unless otherwise indicated.

** Apart from the so-called 'citadel', at Mohenjodaro.

† "Curiously, such hot-vapour baths were a familiar sight in ancient Mexico. Says Grahame Clark, apropos of this Indus City's bath, "the great bath or tank is surrounded by a verandah and cell-like rooms; the whole suggestion is of ceremonial cleansings such as are featured by modern Hinduism." (World Pre-History, P. 184).

"This mania for baths bespeaks Aryan influence."* A competent civic administration is doubtless implied in the efficient water supply, the systematic drainage, and the indications of street lighting in the shape of lamp posts. City rubbish and night soil were taken out of the city, and presumably disposed of in adjacent fields.

The skeletal remains are considered to represent the proto-Australoid, the Mediterranean, the Mongoloid and the Alpine types, thus indicating a mixed cosmopolitan population. "Such a large city could have existed only through efficient transports, organised trade and irrigation systems." Wheat and barley were extensively consumed along with rice and various animal foods, including milk. The animal world of the Harappans was not meagre; it consisted of both the domestic and the wild creatures, as evidenced by the seals and the mortal remains. The famous Brahmini bull, the donkey, the buffalo, the sheep, the pig, the elephant and the camel, were all found to be serving man. "Bones of the horse have also been found; it seems therefore reasonable to suppose that the horse was not unknown to the Indus people". (The Vedic Age, P. 174). Lions and tigers, the rhino, the monkey and the bear constituted the wild fauna known to these people, as were also probably, the parrot and the pea-cock, but skeletal remains of these have not been found.

In dress, the Harappans resembled the Aryans, using two pieces of vestment. An *uttariyam*, worn like a shawl over the left shoulder, was the upper dress; the lower garment was a *dhoti*-like vestment, worn round the body and tucked in between the legs. Garments were of cotton, and perhaps of wool, and possibly they were sewn, as would appear from the needles discovered at the sites. Hair dresses were seemingly elaborate in the case of females; males wore their hair long and this was parted in the middle and kept in place by a *fillet*; alternatively, it was coiled in a ring at the top of the head, where it was secured by pins or *fillets*, made mostly of gold, silver or copper. Men usually grew

* The orthodox Hindu, according to our *Sastras*, should bathe twice a day; the *sanyasin*, thrice a day.

a beard.—There was a love of ornamentation in both sexes, gold and silver being profusely used. Semi-precious stones like lapis lazuli, turquoise, carnelian, agate, and jasper, were widely utilised. Feminine toiletry was an elaborate art and the vanity cases of the women were will-filled and ornate. Ivory and gold toilet jars have been found and faience boxes with four or more compartments, for keeping scents and unguents. Mirrors of bronze and combs of ivory were common, as also fine razors* and hair tweezers.

The pottery, household wares and furniture, were of a high order. Bed-steads, chairs and stools were in common employ. Metallic lamps and candle sticks were also in use. Needles, awls, axes, sickles, knives, fish-hooks and chisels, of bronze, were in evidence. Marble balls and dice cubes were used in games:—“Dicing was a common pastime as in Vedic times”. (The Vedic Age). The dice were of ivory and cube shaped, 1 being opposite to 2, 5 to 6 and 3 to 4 and the dice were probably used with board games.** Hunting with bow and arrow was a favourite pastime, as also bull-throwing and bird (cock?) fighting. Clay modelling was the pet occupation of children and the Indus toy-carts are the earliest representations of wheeled traffic in the world. “A copper specimen found at Harappa somewhat resembles the ‘ekka’ of today, found in the U.P. and the Punjab. It also appears that the ancients used the same type of bullock cart as is found in modern Sind.” — Horse-drawn vehicles were rare, although traces of the horse have been definitely established.

* Students of the Vedas may be aware of the remarkable hymn addressed to the shaving razor, in the Atharvan.

** Dicing was a prominent amusement (and an affliction) in the Vedic Age vide, the famous “Gambler’s Lament” in the Rig Veda. (X-34). An inveterate gambler was called respectively Aksha and Salaka. Five pieces were used in those days (Panchika). The best throw was the Aksharaja with all the five pieces face upwards. The worst was Kali, with all the pieces face down. In between were the Krita, Treta and Dwapara. Apasthamba would countenance dicing even among Brahmins. In his Grihya Sutra he asks the king to build a palace in the centre of the city and to attach to it some halls where dicing equipment would be provided for visitors. “Mounting the brown horse” was a Vedic expression, for dice-play.

Weights and measures were used in profusion and they were wide in their range. The smaller weights were *binary* and the larger ones *decimal* (and there was no sexagesimal system). "The number 16 seemed to dominate the rates of the weights"* Scales for weighing were known, but they were ordinary balances. Length were measured, apparently, on a decimal pattern (as in Egypt and Sumeria), "Probably, the decimal system originated independently in the Indus Valley." Measures used indicated that both the foot and the cubit system were in use.

Specimens of weaponry are abundant. Axes, spears, daggers, bows and arrows, maces, slings and swords, made generally of copper or bronze, have been located. Maces were made of alabaster, sand-stone, or a hard green coloured substance, resembling jade (c-f. the maces of jade in Polynesia). A kind of scale armour, made of copper, was used as also the shield. Saws with toothed edges were found; such were unknown in other ancient civilisations of contemporary date.

Export and import trade was vigorous. Various metals like copper, tin and lead, as well as precious stones must have been imported from other parts of India. "Evidence of (trade) relations with Sumer is overwhelming and Egyptian contacts are not lacking in evidence." Seals showing ships, indicate knowledge of the sea. "Mohenjodaro must have been a great inland port, carrying on trade with Ur and Kish, as well as with Egypt."**

* It is interesting to note that the Atharva Veda (Parisista XXXIII-3) : indicates a similar ratio: 5 Krishnas=1 masha; 64 Mashas=1 pala; 32 Palas=1 Prastha; 4 Prasthas=1 Adhaka; 4 Adhakas=1 Drona; (16 Prasthas=1 Drona); The Manusmrithi makes 16 Mashas equal to 1 Karsha or Suvarna for gold, and 16 Mashas equal to 1 Dharana for silver.

** Lothal in Saurashtra, particularly, specialised in foreign trade; huge kiln-burnt bricks used in building dockyards have been found. The docks were equipped with a spill-channel, water-locking arrangements, and a ship basin. Short retaining walls round the basin allowed ships to reach sea at high tides, the required water level being maintained by wooden logs and tight fitting doors. Clay models of country-boats and sailing ships were found near Lothal.

Social stratification of the people into 4 main classes is indicated, viz., "the learned class, (consisting mainly of priests, astrologers, physicians and magicians); the warriors; the traders and the artisans: and finally, the manual labourers, corresponding roughly to the varnas of the Vedic period". (The Vedic Age).*

There was little art for arts' sake and no deliberate ornamentation except in jewellery; — everything was plain and utilitarian except, perhaps, for the seals and the figurines. The steatite (or soapstone) seals are remarkably well-made and bear an artistic touch. The best seals are those of the humped bull, the buffalo and the bison, of which the artists had probably a personal knowledge and these are master-pieces of the engravers' art. Statuary, on the other hand, is rare; the most noticeable is that "of a bearded person wearing a shawl, decorated with trefoil patterns, over the left shoulder and under the right arm; the eyes are long and half closed in a 'yoga' attitude". Two other defaced statuettes found at Harappa "have revolutionised current ideas of early Indian art. In the opinion of eminent art critics, for pure simplicity and feeling, nothing to compare with these masterpieces was produced until the great age of Hellas". (The Vedic Age, P-187). Spinning of both cotton and wool, (on the spindle whorl,) was common for all classes. The cotton used was the coarse Indian variety, found in Upper India today, (and not the wild species). The vivid purple dye found in textiles was probably from the madder plant; and dyers' vats have come to light. The Indus Valley pottery, wheel made, heavy and decorated, did not have the delicacy and fineness of the Sumerian ware. (Indian made vases and goblets have been found in Mesopotamia.) Eggshell pottery of exquisite workmanship flourished at Harappa, although absent in Iraq. Perforated pots (reminding one of the Vedic 'sahasradhāra')** were ubiquitous. "In Indus Valley pottery, straight and angular shapes are rare; the graceful curves are the rule; miniature vessels are particularly so marvellously executed as to evoke the admiration of

* Please see Note to this Chapter.

** According to Dr. T. N. Ramachandran, the sahasradhara vessels resembled cow's udders.

visitors". The model (toy) carts drawn by humped oxen, are a delight to the eye.

The seals (made usually of soapstone but also of faience and ivory) are the well-known speciality of the Indus Valley. Several thousands of them have been excavated, many in the Gujarat region. The steatite for the stamped seals came from the Aravalli hills, on the other side of the Rajaputana desert, (thus indicating that the great inland sea had either dried up or was doing so). The soap stone was hardened by heating and the designs were cut by burin, and finished to a smooth glossy surface. (Some square or rectangular seal-like tablets, in copper, have also been found). The seals are round, square, or oblong with a pierced hump at the back for suspension. "The flat (or stamping) face was decorated with designs, figures of animals or birds, and the inscriptions in a 'pictographic' script, which latter, however, do not seem to have any necessary verbal connection with the figures, as the same scripts are found with several motifs."* The swastika design which is found in Crete, Cappadocia, Troy, Susa, Musyan etc., (but not Iraq or Egypt,) "indicates their religious use or significance." Only a few cylinder seals (so common in Iraq and in Anatolia) have been found and those have purely Indian devices.** "There is some doubt as to whether the Indus seals are religious in character and indicate some sort of animal worship". The animal symbolised most frequently, is the unicorn, a mythical creature resembling a humpless bull in body, with a sort of horse's head and with a single horn protruding from its forehead. The other animals commonly depicted on the seals are the Brahmini bull, the buffalo, the elephant, the tiger, the antelope, and the rhino. Fantastic composite figures, like those with a human face, bull's horns and buffalo's body are also found.† The surmises regarding the use of these seals are varied and inconclusive. Some authors even doubt if the seals were not currency, or amulets. Others conjecture that their use

* I have suggested a different assessment of the seals, vide infra.

** Dr. Hunter considers some seals to represent receipts.

† These are very common in Babylon.

in other countries (e.g., Sumér) would show that they were intended to authenticate some transactions and were very widely in use, among both the rich and the poor alike, on this account.

Ornamental beads were made of gold, silver and copper, as well as semi-precious stones like amethyst, lapis lazuli, turquoise, jade,* agate, jasper and blood-stone. Technical skill of a high order was shown in turning out these beads which were brightly polished. The gold work was done by jointing and soldering, casting, and beating out.** Fine drawn silver and gold wires were used for earrings and necklaces. "The use of bronze shows a great advance over contemporary civilisations in metal-working but artistic skill was not on a level with the technical." Copper vessels were worked from sheets; but bronze ware were cast by the *cire perdue* process. Lead was extensively used, but no evidence of iron ware of any sort has come to light. Ivory was also a rare substance, "probably due to the elephant being treated as a sacred animal". The art of glazing was known and vitreous paste and faience were extensively utilised in domestic ware.

As already mentioned, no religious buildings have been located and no domestic shrines or altars seem to have existed. (It may be remembered that, in Vedic times, no temple, or image, worship was known). The cult of the Mother Goddess† however is suspected to have existed on the basis of figurines supposed to represent the Mother Goddess. "There is no reason to believe that the cult of the Mother Goddess originated in Anatolia or any other particular country, because the concepts of the motherhood of god and of the divinity of nature are quite common among the primitive peoples of the world and are wide-spread and deep

* "The green-stone was apparently taken out of the Nilgiris in South India, and tin from the mines in Bihar." (R.K. Mookerji, "Glimpses of India", P. 15).

** Gold was produced locally in abundant measure but there is some indication that the metal came from the Kolar District also.

† 'Matr Devah,' in Sanskrit.

rooted in India, known under various names like Māthā, Ambā, Ammā, Kālī, Karālī etc.," both benign and awesome.*

The forbidding figure with a horned head-dress, sitting in a yōga (padmāsana) posture on a raised seat, surrounded by animals, has been called a "proto-Siva", because (1) he is trimukha or three faced (2) he is pasupati or lord of animals and (3) has the look of a mahāyōgi. This raises the intriguing question as to whether the Indo-Aryans borrowed the 'Siva idea' from the Indus Valley people. But there is a reference to Siva in the Rig Veda itself, (II, 1(6) ; II-33(9) ; X, 92(9). "Siva (therefore) may not be a later intruder in the Hindu pantheon". Phallic worship is, in the opinion of some critics, evidenced by the presence of a large number of conical and cylindrical stones "supposed to symbolise fertility and connected with the cult of Siva, as linga". Small ring stones also seem to suggest that the worship of the yōni too was prevalent to a minor degree but this is not quite certain.** "The Vedic religion was originally aniconic, the worship of icons arising at a later date,"

The mythical animals bear a strong resemblance to those in Mesopotamia; for example, the halfman-half-bovine divinity, attacking a tiger, resembles God Enkidu of Sumer. "The oft repeated unicorn is taken to be a sort of city god and perhaps Vishnu, in his boar incarnation. Some other animals, appearing on the seals, are taken to be vāhanas, as, for example, the bull, the carrier of Siva". The worship of trees and plants is also

* The Rig Vedic concepts of Prithvi and Diti are analogous to the Mother Goddess cult of later days. The Mats, (i.e., Mother Goddesses) were worshipped by Hindus from time immemorial. The Matsya Purana names 100 Mother Goddesses. Similarly, the Bhavishya Purana mentions 7 Mats. (Maheswari, Brahmi, Kaumari, Chamundi etc. etc.) Literary and archaeological references to them are plentiful. The concept later on spread to other lands peopled by Aryans (e.g., Indonesia).

** Even such a harsh critic of ancient Hindu religion, as L. D. Barnett, has this to say, apropos of the Linga-worship. "It may be admitted that in the higher developments of Hindu religion the phallic emblem and its feminine counterpart are sublimated into symbols of cosmic and theurgic powers, to which no grossness attaches." (Antiquities of India).

inferred from some seal motifs, especially "the trisula-horned deity, standing nude, with long hair, between two branches of a tree, with a worshipper kneeling beside the tree, along side of a composite animal, and with seven standing figures with gowns reaching to the knee".

"Rectangular aisles (in the buildings) separated from each other by long walls, suggest the Vedic sacrificial altar, (i.e., the *agnisālā* paved with bricks)". The representations of the swastika and the wheel, which are the symbols of the Sun, suggest that the Sun was not represented anthropomorphically, but symbolically. There is also some indication of Nāga worship in a faience tablet, showing a seated deity, with a hooded cobra over its head.

Three forms of burials have been noticed; i.e., complete burials, fractional burials and post-cremation burials. The last two represent respectively the inhumation of skeletal bones after exposure of the body to wild beasts and birds, and the burial of funeral ashes in wide-mouthed urns, bones being generally absent. "The uniform quality of the urns, quite distinct from domestic varieties, and offerings in the form of special objects of interest to the deceased, and the burial of these urns near houses, leave no doubt as to their being burial urns".

Various opinions have been expressed about the Indus-Valley script. Some call it 'pictographs' but others think that they had become so standardised as to represent ideographs. My own suggestion is that the signs represent either advanced ideographs or possibly crude syllabaries, showing a distinct advance over the early Sumerian.* The script remains the same during the many centuries of the Indus Valley culture, thus indicating its early maturity. Apart from the startling clarity in depiction, "admirable ingenuity is displayed in modifying the signs by the addition of strokes or accents and in combining (the signs) to

* "The recent discoveries at Lothal seem to provide the missing link in the history of Indian writing. They show a late simplified form of the Indus Script, in which the pictographic element has nearly completely disappeared. From this simpler script, the Brahmi alphabet may be descended." (The Ancient World-I, Page 89).

form compound syllables. The script was mainly phonetic, most (signs) standing for open or closed syllables". It is surmised that the script ran from the right to the left (like Kharōshti) and was also boustro-phedan. Dr. Pusalkar (writing in 'The Vedic Age', from which I have quoted extensively) sees resemblance between the Indus Valley signs and the Sumerian, Hittite, the (later) Egyptian, Cretan, Cypriot and the Chinese scripts. "Similarity has been traced with the script of the Easter Islands and the Tantric pictographic alphabets (of India). Some scholars even claim Brahmi to have been derived from the Indus script. Indian scholars think the (scriptural) language to be Sanskrit, and others, to be Dravidian." The decipherment of the Indus Valley script is still an unsolved problem and will remain so till some bilingual inscription, turned up by the spade of the archaeologist, in Iraq, will give us the right clue.*

Since iron has not been found in the Indus Valley, the culture is considered to be essentially chalcolithic, bearing close similarity to the cultures of Mesopotamia. On this basis, and on the assumed life of each occupational period, (seven city stratifications have been found,) it is supposed that the earliest Indus Valley cities flourished between 3250 to 2750 B.C. and that the "main culture period ranged between 2800 and 2500 B.C. though it must have had a long period of anterior development. The civilisation, for all we know, may reach beyond 3500 B.C. The culture period of the civilisation, as revealed by its finds, seems to have lasted roughly from 2800 B.C. to 2200 B.C." (Dr. Pusalkar.)**

Concerning the authors of the civilisation, nothing definite could be stated from the evidence of the skeletal remains or the

* Recently claims have emanated from Russian sources, that the script has been read, using electronic computers.

** Regarding the age of the Indus Valley civilisation, Tomlin observes as under: "It seems certain that Mohenjodaro was the scene of brisk commerce, trafficking and gracious living at a period assigned by the Egyptians to mythical Kings, like Scorpio. This places Mohenjodaro, for the present, at the head of all civilisations of the world" (Great Philosophers of the East, P. 156). Modern historians now agree that the Egyptian chronology was pushed back too far, by earlier writers.

statuary. "The authorship has been ascribed to Dravidians,* Brahuis, Sumerians, Panis, Vrātyas, Vāhikas, Dāsas, Nāgas, Aryans etc." That the so-called Dravidians had anything to do with this culture, seems very doubtful, as cremations and urn-burials were unknown to them and their present habitat (South India) has not revealed the remotest trace of a similar ancient culture. The Brahuis are a tiny community and they belong to the Turko-Iranian stock, having absolutely nothing in common with the so-called Dravidians of the South, except a fancied resemblance in speech. The orthodox West-oriented school, following Sir J. Marshall, has held that the Indus Culture is anterior to the Rig Vedic civilisation (commencing from about 1500 B.C., in its opinion). The theory in favour with this school is, that the Indus Valley peoples (spreading from Afghanistan to Kathiawar and from the Makran coast to the Aravalli hills) were an exotic community, (perhaps, remotely allied to the so-called Dravidians) who were exterminated by the incoming barbarian hordes, who styled themselves "Ārya" or noble.**

Having described very briefly the culture itself and having stated the views of the conventional schools on one side, and of Dr. Pusalkar on the other, it may be worthwhile discussing the arguments in some detail, in the light of my thesis, as suggested in these writings.

In some respects, the history of Aryan India is like the history of Egypt. The set prejudices of early historians have propagated error and discouraged research. In the case of Egypt, the classical writers of antiquity laughed at the

* "The theory of P. Heras, which made the carriers of the Indus Culture speak a "proto-Dravidian" language, has not yet received any confirmatory evidence and has never been accepted outside India." (The Ancient World I, Page 61).

** Regarding the vindication of "Indra and the barbarian hordes" please see Note on P. 45 "The possibility cannot be overlooked of an ecological upset to disturb irretrievably a finely balanced economy." (World Pre-History, P. 185).

claims of the Egyptian scribes; and their successors in modern times, did more to kill history than to write it.* Similarly, from the time of Al Beruni, it was fashionable to run down the age-old traditions of the Indian nation, and to accuse their poets of unabashed tale-telling. Till almost a generation ago, it was vigorously urged by Western historians that there was nothing to record about Indian history earlier than circa 1000 B.C., when the Rig Vedic songs were allegedly composed. The subsequent discovery of the Indus Valley culture posed a problem for these historians, which was solved by attributing this culture to a race different from the Aryans, and in a sense, victimised by the latter. Taking the arguments (on either side) one by one :

A proto-Siva has been "daringly identified" by Western archaeologists, with the implication that this "non-Aryan" God was grafted into the Hindu pantheon by a series of transmogrifications of the Vedic Rudra. The latter, (envisaged as a fiery implacable deity of war and pestilence). became, (in this view) a benign Protector, upholder of the Rta and the Presiding Genius of the periodic cosmic dissolution, antecedent to re-creation. I feel that the suggestion of the Westerners, that this change over (of Rudra into Siva,) was due to non-Aryan inspirations, is not at all convincing. As pointed out above, the Rig Veda itself contains the germs of the Siva concept. From the verses already cited by me, it is clear that the incipient image of a compassionate Siva was already being built up in the earliest sacerdotal literature. Rudra was termed a healer, as well as the harbinger, of disease. He was described as the "chief physician among physicians", in Rig Veda. II (15). ; Rig Veda II (33) 8 is particularly significant. To quote this verse :

"I address infinite and earnest praise to the showerer (of benefits), the cherisher (of all devotees), the white-complexioned ; (I) adore the consumer (of sin) with prostrations and, (I) glorify the name of Rudra ".

* Till the 20th century, it was believed that Egyptian history began only about 776 B.C.

Prof. Wilson comments thus on this verse: "The white complexion of Siva, the later representative of Rudra, has, therefore, its origin in this Rik."*

The Siva idea, therefore, cannot be said to be foreign to the Veda or as one imported from alien sources. As mentioned elsewhere, if the proto-Siva of Mohenjodaro was a deity of the inimical Dasyus or Dāsas, (or Dravidians? Sumerians?), it is extremely unlikely that he would have been elevated to the top of the Hindu pantheon, as Mahādēva, Paramēśvara, Dēvasimha, etc. by the Aryans, As early as the Mahābhārata, (Vanapara, 272 (48), the Trimūrti concept is alluded to and, Pānini mentions the four names of Siva's consort (IV 1(59) as Bhavāni, Sarvāni, Rudrāni, Mrdāni. The yōga posture of the god in the Harappa seal is something quite concordant with Aryan religious practices. The worship of Durgā as the consort of Siva is very ancient and can be traced to the Āranyakas and the Upanishads. (In the Kēna Upanishad, III (25), Umā Haimavāti is depicted as imparting to Indra, the knowledge of the Supreme being). We have seen elsewhere, that in the Hittite empire, the matrimonial episode (of Teshub and Heput i.e. Dēvasimha and Hēmavati), had been pictured in rock-cut, as early as the 14th century B.C. If the Aryan nomads overwhelmed the 'Harappans' say, in 1400 or 1300 B.C., how could this Rudra-Gaurī (or Siva-Pārvati) legend travel all the way to Anatolia in 1400 B.C.? The idea of Rudra and Pārvati, as Śiva and Sakti, is very ancient in Hindu mythology, and this dual concept is often personified by making the deity half-male and half-female. Most important of all, is the fact that internal developments in Hindu ideas of godhead are not confined to Rudra alone. Indra gradually declined in status and almost disappeared from popular worship, as the Hindu sacred literature advanced. Such was the case with Brahma also, to whom few temples were later dedicated.** On the other hand,

* In the same sukta - Rudra is depicted as shining with brilliant golden ornaments and as wearing an adorable and omniform necklace. Readers may be familiar with this picture of Rudra, or Siva, wearing necklaces of emeralds, green stones and of aksha seeds.

** Both Siva and Vishnu were also considered as 'terrifying', as seen from their appellation of Ugra.

Vishnu, who was quite a minor figure in the Rig Veda, being described merely as 'Indrasya yujya sakhā' (i.e. fit to be a companion of Indra), became later on one of the Trimūrtis and the inspirer of several glorious avatars, serving as themes for colourful Purāṇic episodes and for monumental epics. If Siva was borrowed from a hostile foreign tribe in Sind, could he be associated with places like Kailas, Badrinath and Harmukt, all near the Kashmir Valley, the fabled home of the Aryan peoples and one of the cradles of early Aryan culture? Further, Rudra as Pasupati, is conceived of even in Vedic literature.* Finally, as Sir Monier Williams points out in his famous Dictionary, Rudra was probably styled as Siva at first, for euphemistic reasons, even as the Greek Furies were usually referred to as "the gracious

There is practically no artifact, animal, or other object, found in the Indus Valley sites which is not referred to in the Vedas; even the tiger which is not named in the Rig Veda, gets common mention in the Yajus. The absence of iron implements, among the Indus Valley finds, requires an explanation and it is probably this: although the Rig Veda, towards its end, indicates the knowledge of iron, and the later Vedas confirm the fact, it was likely that its use was extremely limited both owing to the scarcity of ferrous ore and the lack of facility for making iron and steel, as borne out by our experience elsewhere. While gold, silver, lead and copper ore are plentiful in Sind and Rajaputana,

* A favourite prayer in the Vedas is to request the two Gods to be kind to the two-legged and the quardrups. "Of Rudra, it may be doubted if his character partakes of that fierceness and wrath which belong to the Rudra of a later date. He is appealed to as wise and bountiful, the author of fertility and the giver of happiness; attributes of a benevolent, not of a malignant and irascible, deity." (Wilson—Introduction to Rig Veda, Part I (XXXVI).)

** The Gods would be pleased, if they were prayed for in their euphemistic personalities!

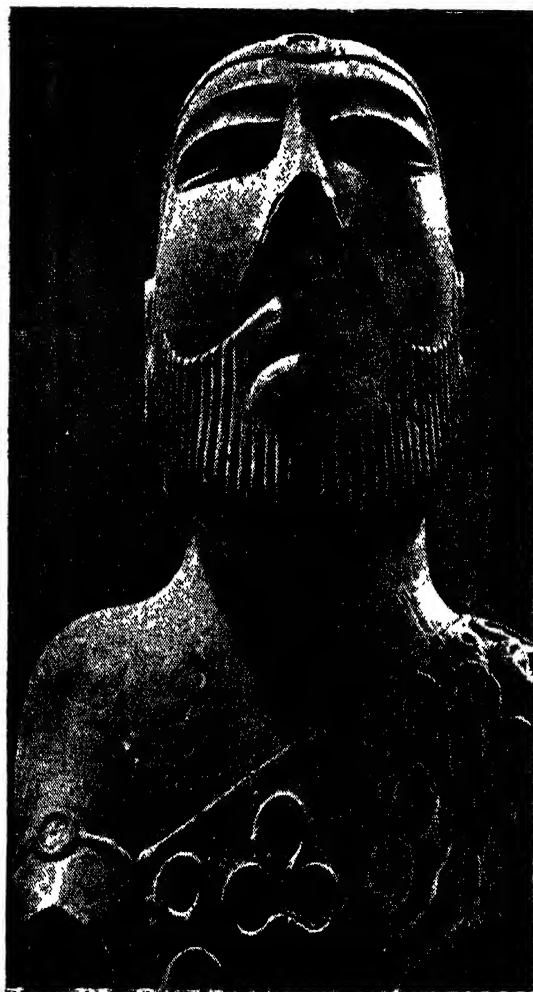
iron ore is notoriously lacking.* The frequent mention of the elephant and the lion in the Rig Veda, (which animal species died out long ago in north-west India and Sind), indicates the great antiquity of these songs. The presence of the tiger motif in the Indus Valley seals, on the other hand shows that this civilisation was coincident with the age of the Yajur Veda, when the Aryans had moved into the Gangetic basin. It would appear, that in ancient times, Rajaputana and the Gangā-Yamunā Doab contained forests where the rhino and the tiger, along with the elephant and the lion, roamed at large, in considerable numbers.

Elsewhere in these writings, I have tried to prove that the Vedic Aryans were familiar with the art of writing. The Indus Valley seals are consistent with this theory; it is possible that the Rig Vedic people knew only of pictographs and that the semi-finished 'Harappan' syllabary was a later refinement. Unfortunately, the Indus Valley script has not yet been read and its language is not known with certainty. I suggest, however, that it should be either Sanskrit** or its colloquial equivalent, viz., Prakrit for the following reasons.

(1) Swastika seals and amulets have been found in considerable numbers in the Valley and in Kathiawar. The Swastika is a

* In ancient times, Sind was phenomenally rich in gold (and silver); gold was obtained from alluvial sources. It is common knowledge that Sind paid the largest tribute (in gold) to Darius the Great, of all his Satrapies. Rajaputana had very ancient lead and copper mines. South India also produced much precious metal and gems. "In the abundant booty loaded into the Pharaoh's vessels for conveyance to Egypt, appear a great many Indian animals and products, elephants' teeth, gold, precious stones, sandalwood etc." (Historic Anc. de P. Orient Vol. II, P. 294). The ships of the Pharaoh were loaded at the mouth of the Sindhu, in 1800 B.C.

** "Sanskrit was a widely spoken language in ancient times, at least among the upper classes. It retained this status even upto the Middle Ages. In Kashmir it was the official language under the Afghan Kings, for two centuries after the Mohammedan conquest. It was the language of the Shahi Brahmin Kingdom of Afghanistan, till the rise of the Ghazni ruler to power. The gold coins issued by Muhammed Ghazni bore the legend "Avyaktam Ekam Avataram Muhammed" in Skt letters.



TO FACE PAGE 271.

THE STATUE OF A BEARDED FIGURE

(The Yajamana referred to in the Text)

sacred Aryan symbol and it is likely it was propagated as such, in the Harappan culture areas. It is highly significant that this motif has not been found in Babylon or Sumeria but only in those areas (like Katpatuka, Persia and Crete), where there had been not only heavy Aryan acculturation, but also *Vedic inspirations in worship and in images and symbols*. In Sumer and Babylon, although Aryan influences are highly probable (as I have argued elsewhere), Brahminical motifs and rituals would have been taboo, owing to the population being substantially non-Aryan (at bottom); and the Aryan ideas being tainted with schismatic and Vrātya tendencies, in these regions.

(2) The pipal leaf motif, (essentially characteristic of Brahminic ceremonial) has been located at Mohenjodaro. The tree is a native of the Punjab and the Gangetic basin, and cannot be said to have been borrowed from the Harappans, by the Vedic Aryans.

(3) The statue representing a bearded figure in a trefoil shawl, with his right arm bare, is strongly reminiscent of the 'yajamāna' of Vedic sacrifices, especially the Asvamēdha.

(4) The spoked wheel, appearing on the seals (usually with six members), is highly suggestive of Vedic civilisation. The spoke-wheeled chariot was unknown outside Sapta Sindhu, till it was propagated in the Near East by the Aryans in the course of their *drang nach Westen*: it reached the Fertile Crescent areas in circa 1800 B.C., and Egypt a few centuries later. The Sumerian and the Babylonians were ignorant of horse-drawn vehicles, although some sort of conveyances with solid wooden wheels and drawn by onagers (or kiangs) were known. In this connection, one may ask why the Aryans, who emigrated so early to Sumeria, (according to my thesis,) could not introduce the horse chariot, as well as the fighting elephant, into the Fertile Crescent earlier than 1800 B.C.? The explanation is somewhat simple; the early Ayans who travelled to Sumeria (and later, to the Mediterranean coast) went mostly by sea. As I had described elsewhere, these ancient mariners used at first, comparatively

small craft, which normally hugged the coast. In these circumstances, it was not possible to transport chariots* and horses into Sumeria, (where, probably, equines were also in limited supply) from the Gulf of Cambay areas, and the Indus Delta. Without good and fast draught horses the light chariots would have been useless in Sumeria, which was partly marsh and partly desert. It was only later (i.e., after 2000 B.C.), that the Aryans were able to transport both horses and chariots into the Near East, mostly overland, although by this time, the Panis (i.e., Phoenicians) also had learnt deep-sea navigation and were able, in due course, to transport by water, chariots and special hard woods into the Valley of the Twin Rivers. I may also draw attention to the fact that the Panis were, in the main, carriers, traders and middlemen. They were not particularly interested in war-like activities: on the other hand, the Aryan princes who left India for the Near East, via Gāndhāra and Āryānaka, were Kshatriyas; and their followers, who were well accustomed to cavalry and chariot warfare were able, as we had seen, to propagate these martial accessories in the Near East.

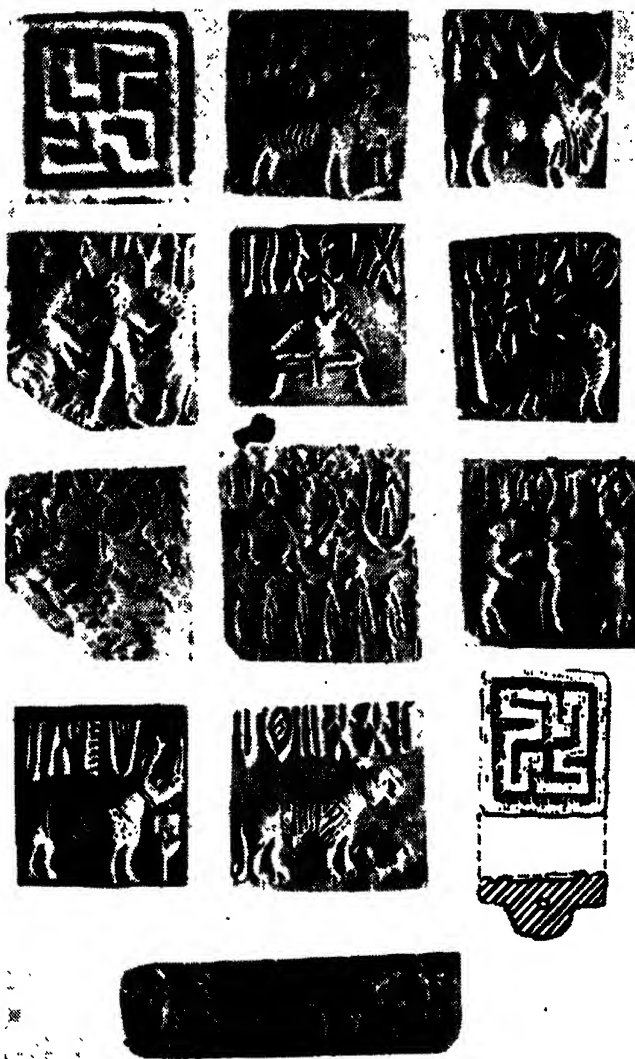
(5) The discovery of the lotus and the peacock design on the pottery, strengthens the case for considering the Indus Valley, culture to be Aryan.† The same argument would apply as regards such urban amenities as an excellent drainage system, private and public baths, and spacious granaries and stores for essential commodities. The Aryan mania for personal and public hygiene is too well known to need much emphasis; the granaries and the store houses are in keeping with the ideals of benevolent and solicitous kingship, so graphically depicted in our ancient sacred literature.

(6) The art of building in burnt brick, (so common in the Indus Valley,) is an early Aryan achievement. The Vedic texts frequently mention brick-work, particularly, in the setting up of the elaborate chyēna etc., 'chitis', as mentioned

* Particularly the huge 'rathavahanas' or chariot-carriers, without which the chariots would be immobilised. The elephantry was introduced in the Near East only after VI Cent. B.C.

† Indian archaeologists now believe that the bird motifs on the burial urns correspond to Vedic theories of the journey of the human soul towards the heaven.





TO FACE PAGE 273.

SPECIMENS OF HARAPPAN SEALS (Referred to in the Text)

elsewhere. The scientific use, of large-sized, well-cut and efficiently fired bricks* in masonry work in the Indus Valley tends, in my opinion, to reinforce the Aryan origin of the builders. Such expertise naturally passed on to the successors of the Vedic Aryans; at Kausāmbi, Ahichchatra, Hastinapura and other places, excellent brick work of the same type, in fortifications and in residences, going back to 1500 B.C., (if not earlier), have been brought to light.

(7) The absence of temples** (with, however, suggestions of college halls or monasteries) is a pointer to the religious life of the people being of the Vedic aniconic type. We know that right down to the Purāṇic times, the Aryans built no temples and put up no images, (or idols) of the gods. Unlike the Egyptians and the Babylonians, the Indo-Aryans believed in simple and unostentatious rituals, and carried on worship mostly in the open or in improvised halls, (or *vēdis*).

(8) The presence of ivory dice and chess-men indicates continuity of social habits with the Vedic Aryans, who were extremely fond of games of skill and chance. The numbering of the dice-cubes seems to be based on the system referred to in Vedic literature.

(9) The existence of some thing like a caste system, resembling the four varnas of the Vedic era, lends support to the point of view put forward here.

And now to turn to the *piece de resistance* of the argument, viz. the famous steatite seals, many hundreds of which have been found, not only all over the cultural area, but in distant Sumeria also. I have mentioned some theories suggested by

* The bricks are still hard and sound after 5000 years. The brick work was done by adopting what is now known as the English-bond, with staggered joints and alternate headers and stretchers. In Sumeria and in Egypt, brick work was mostly in adobe i.e. sun-baked brick. The Egyptians knew the true arch, but in India corbelling was the rule and this was followed in the Valley.

** Recently some buildings, resembling small stepped pyramids have been found. There are usually seven steps, thus typifying the seven worlds of Aryan theogony.

archaeologists about these seals. My own views are set down below for the consideration of the gentle reader, with the warning that these are merely the suggestions of an enthusiastic amateur, with no expertise in palaeography. My opinions are, accordingly, formulated with due circumspection and qualification and are offered as tentative hypotheses, to stand along-side of those subjective, inconclusive and nebulous ones, proffered by Western writers.

To start with, a non-Aryan Siva has been "daringly identified" in the Indus Valley, by Mortimer Wheeler, on the basis of a few seals suggestive of this well-known Hindu divinity. I have discussed the merits of this proto-Siva theory and tried to prove the untenability of the suggestion that the post-Vedic Siva was evolved out of the grim-looking 'tribal god' of the Harappans, through a species of adoption and adaptation. Mortimer Wheeler has not clearly explained whether his 'proto-Siva' was made into Rudra by the Vedic rishis in their songs of victory, *after* the down-fall of the Harappan community or whether the Vedic Rudra, independently conceived, was moulded into the post-Vedic Siva, thanks to the ideologies borrowed from the hapless denizens of the riverine towns, allegedly destroyed by the Aryan hordes. These seals however, seem to me to give a clue to the real nature of the artifacts in question, which are probably neither receipts, nor autographs, nor evidences of animal cults, as surmised by some writers, but picturisations of Vedic rituals or Vedic deities, accompanied by appropriate descriptive scripts. This explanation is accepted, on all sides, in the case of the 'proto-Siva'; the deity is recognised as representing Siva as Pasupati.* If this be the case with those seals containing the figure of a sitting god (in various postures), I suggest that many other seals, containing figures of animals (either composite, or real to nature) and of human beings, should be similarly construed. For instance, the seal depicting the Brahmini bull, with a huge hump and enormous dewlaps, could be, perhaps, interpreted as Vrishanka an epithet of Siva (वृषाङ्कः,) where the script reveals only three syllabaries. If the same bull be shown with a

* The script should apparently follow this motif.

different script, the interpretation should naturally be slightly modified. For instance, Vrishanādin, (or roaring like a bull) may suit the interpretation of a seal where a bison or a bull is shown in a posture indicating deep bellowing.* Similarly Vrishaparvan, (or "shoulders like a bull's") may be the decipherment of the seal, showing a human-like deity lifting up a tiger with each arm.

It may be mentioned at this stage, that all the animals, including composite ones, figuring in the Harappan seals, are found in Vedic literature and are often identified with the deities adored in the hymns. Indra is frequently called a bull, a lion, a bison (and in the Yajur Veda), a tiger. Rudra is similarly identified with a bull, as we have seen. Vishnu is described in the Vedas as Ekasringa (i.e., single-horned), and is also depicted as a boar and as a mighty fish.** The stag is identified with the Soma sacrifice ["Mrga ēva hi yagnāh", Āpasthamba, XII, 17 (4)]

The Ekasringa (or Unicorn) symbol is not peculiar to the Indus Valley, as I shall show presently. In the Valley, this animal is depicted either as the single-horned rhinoceros, (which is native to India and which is referred to in the Vedas), or as a composite quadruped with the body of a bull (without dewlap and hump) and the face of a horse, but with a single large horn on the forehead. It is true that the legends on the Ekasringa seals are divergent; I suggest that, in these scripts, Vishnu is probably described by different names, even as Rudra is, in the so-called proto-Siva seals.† It is also possible that Indra is also depicted in this composite bull-horse fashion; Indra's mount was

* Rudra really means a 'roarer.'

** In his Matsya avatar, Vishnu helped Manu to re-populate the world. In his Varaha avatar, he killed demon Emussa, who was oppressing worshippers of Vishnu.

† In late Vedic literature, both Vishnu and Rudra are given many different names. The famous Satarudriyam, forming part of the Yajur Veda, will be familiar to our readers. Vishnu has his Sahasranamam.

known as *Vrishaśva* (bull-horse or stallion), and Indra was styled *Vrishaśvapati*.*

In many seals, the animal-like deities are shown as standing before a big bowl or trough, (with holes on its sides?,) over which is suspended a frame, looking like a sieve. These contrivances have been described as either a manger or an incense-burner, on the assumption that the quadruped figures on the seals are indicative of animal worship (or zoolatry). I suggest, however, that consistently with my theory, (that these seals depict the Vedic deities like Indra or Vishnu) the objects placed before the figures are Vedic sacrificial accessories. To quote from the *History of Dharma Sastra* of Dr. P. V. Kane, (P. 1160). "Among the several (Vedic) *pātras* (i.e. vessels), the following deserve note : *Drona-kalasa* : a vessel like a *drona* (or a trough), along with the *Dasapavitra* (which is placed below the *Havirdhārā* cart.) The *Drona-kalasa* is square or round. The *Dasapavitra* is a strainer made of the wool of a living ram, which wool must be white (and) about an *aratni* (a cubit) in length". I suggest that the symbolical motifs, appearing on some seals, should be taken as representing a Vedic deity, either Indra or Vishnu, in the form of a composite or a natural animal; the objects placed before the animal (as if intended for consumption), should be considered the *Drona* (or tub) full of Soma juice, with the strainer being shown as evidence of the purification of the Soma-extract.

We may now cast a glance at another interesting seal, which contains a composite animal, a person in an attitude of prayer, kneeling before a deity with three horns, (called by Dr. Pusalkar 'trisulas') projecting from its head, and seven apparently human figures standing beneath, wearing full robes and a peculiar head dress. The interpretation of this seal is, I suggest, as follows:—

The composite animal is an Unicorn, probably representing Indra in the concept of *Vrisha-asvapati*. The kneeling figure

* c/f "The Vedic Age" P. 188. In other legends, Indra is said to have married Mena, the daughter of *Vrishaśva*, a king. It is clear that Indra is strongly connected with the bull-horse concept, in diverse ways.

and those of the seven persons below are the eight sacrificial priests as per the following enumeration.* The *adhvaryu* (or the chief of the Yajus rituals); the *maitrā-varuna*; the *hotri*, who recites the morning prayer; the *unnētri*, (who usually arranges the vessels); the *brahma*, (the silent director of ceremonies); the *pratiprasthatri*; the *subrahmanya*, (who intones the famous Subrahmanya litany); and the *agnidhara*, (who kindles the fire by attrition), depicted as a kneeling figure on the seal. The so-called nude figure with the trisula head-gear is, doubtless, Agni, surrounded by the symbolic *asvaththa* or pipal twigs, (the *ficus religiosa*). The trisula head-gear of Agni, is easily explained. The three 'horns', perhaps, represent the three attributes of Agni viz. *Swishta-krit*, *Jāta-Vēdas* and *Havyavāhana*.** The trail like tuft below the trisula of Agni is probably the *kēthu*, i.e., the smoke usually associated with Agni.‡

If it be asked how the eight priests are shown wearing turbans and long gowns, the answer is that in Vedic times it was obligatory on the priests to wear such dresses (especially in cold climates)† The Dharma sāstras indicate that the sacrificer and the priests should wear garments that had been well washed, dried and fresh; when performing magical rites of the 'abhichara' variety, the priests had to wear garments and turbans, dyed in

* This is for an ordinary sacrifice like, *Agnishtoma*. (Praise of Agni). For more elaborate rituals as many as 16 priests were employed, including 3 *Saman* ones.

** Agni in historical Sanskrit numerology means "thrice" i.e. *Dakshina*, *Garhapatya* and *Ahavaniya*, considered to be the 3 feet of Agni.

‡ Agni has been called 'four-horned' in Vedic literature (RV, IV5(13).

चत्वारि शृंगाः त्रयो अस्वपादाः द्वे शीर्षे सप्तहस्तासो अस्त्य

Sayana interprets the 'four horns' of Agni as the four Vedas used in Yagnas. Mahidhara equates the horns to the four cardinal points. The three horns seen in the seal may signify the 3 Vedas, the Atharvan being disregarded.

† The *Satapata Brahmana* has mentioned that the sacrificial garment consisted of a *nivi* or undergarment, also called *tarpya*, a garment of undyed wool in two pieces, an overgarment or gown, and a turban called *ushnisha*.

red.* The clothes should be of linen, but silk, cotton and wool could be used (but not of a gaudy texture). For the priests, the *ativāsa* (over-garment or mantle or a long gown) reaching below knee, was a common vestment. A *drapi* or cloak is also mentioned and it might have resembled the long gown we see on the figures in the seals. One end of the turban cloth had to hang below the neck, (as is the fashion, even today, in Upper India).

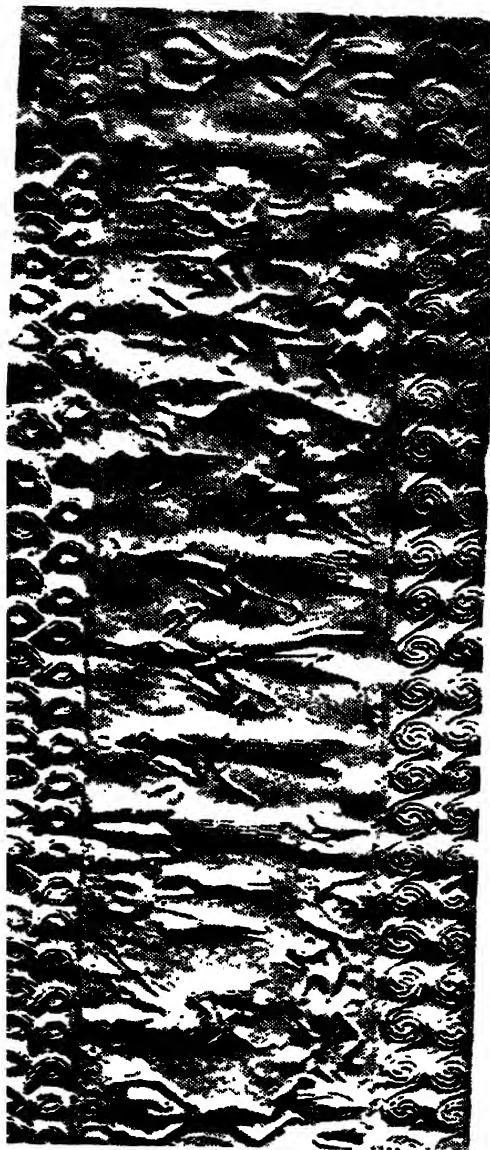
To come to the crux of the problem : is there any extraneous evidence to indicate that the Harappan seals are really Aryan in origin and Vedic in import, as I have tried to make out in this chapter? To find this evidence, we have to travel over 1500 miles in space, and over 1500 years in time. The evidence is found in the Empire of the Hittites, situated in *Katpatūka* (Anatolia) of circa 1500 B.C. Elsewhere in these writings, I have referred to the neatly turned out cylindrical seals of the *Khēta* monarchs, who ruled a long-forgotten Hindu Empire on the Mediterranean, over 3500 years ago. I reproduce here the imprint of one seal, which goes to prove, in my opinion, the contentions raised by me, regarding the Harappan engravings.

It will be observed that this Hittite seal, in a substantial way, resembles the one which I had described above, depicting a Vedic ritual, officiated in by 8 priests. In the Hittite seal, we find *Agni*, the priests and the evidence of a sacrifice. There are here 8 priests, all of them looking like their counterparts on the Harappan finds with the same peculiar head dress, the same bearded face, and the long gown. There are naturally some differences in minor details ; the turbans are of different shapes and not uniform, as in the Indus seal. The *ankusas* (or long hooks, symbolical of royalty)** are prominently in evidence in *Katpatuka* for the simple reason that, unlike in Vedic India, the *Khēta* kings were also high priests, as I had indicated elsewhere.†

* The red-stone turbans on the Easter Island colossi may be, therefore, of magical significance, as I have expained elsewhere (see Vol. II).

** The *Niti Sastras* mention the *ankusa* as a symbol to be placed in the hand of idols.

† They were perhaps, somewhat like the great *Janaka* of *Mithila*, who was a *Rajarishi* and instructed *Yagnavalkya* in philosophy, but who still had the humility to gift himself as a *dasa*, to the great *Vedantin*.



To Face Page 278.

THE HITTITE CYLINDRICAL SEAL (Referred to in the Text)
DEPICTING A SACRIFICIAL SCENE.

One of the priests is double faced; I suggest that he is the dual priest named after Mithrā-Varuna.

Agni appears on the Hittite seal, almost in the same manner as in its Harappan counterpart. There is no Kalasa or Agni-kunda but Agni has three tongues (or *tristūla*) as described elsewhere in this chapter. Remarkably enough, we see here a composite animal (*Vriśha-asva*), familiar to the Indus Valley people.* Below the sacred fire (Agni), we see the emblem of a ritual sacrifice. Some explanation is necessary at this stage. In the construction of a fire altar or Agni-chayana ("the most complicated and the most recondite of the *srauta* sacrifices", in the words of Dr. Kane), the symbolism of the creation of the Universe is enacted. Fire is identified with *Hiranyagarbha* or *Prajāpati*, and *Puruṣa* himself becomes sacrificial material, with the year, the seasons, the Vedas, etc. coming to his aid.† The 10th, or the *Rahasya-kanda* of the *Satapata Brāhmaṇa* brings out the esoteric significance of Agni-chayana. Five victims have to be provided for the sacrifice viz., a man a horse, an ox, a sheep, and a goat, the man being immolated in a screened place; (but see foot note below).‡ The heads of the beasts were built into the altar in the early days, but later (as allowed by the *Sūtrakārās*), golden images were substituted for the bloody remains. The rituals required wooden spades and lotus leaves to be placed near the fire place. The wife of the sacrificer prepared the first brick (from clay mixed with iron dust and small stones) which should be one foot square and have three lines scratched on it. The sacrificer prepared, from the same clay, a round *ukha* or fire-pan, about one span in diameter, in which fire was generated from

* The smaller animal is probably a horse (proper), which animal, figures prominently in this (Agni-chayana) sacrifice. It is supposed to put its foot into the clay trench and to see an imaginary person, called *Anaddha puruṣa*. (*Hist. of Dharma Sastra*).

† In the manner described in the *Puruṣa-Sukta*.

‡ In *Sapta Sindhu*, a man was not actually killed but was let off; he had to be a *Vaiśya* or a *Kṣhattriya*. According to *Baudhayana* (X-9), only the heads of a warrior and of a horse killed in battle, were used in the Agni-chayana ritual. As I had mentioned elsewhere, human sacrifices were only symbolically done, in Vedic and post-Vedic times.

horse-dung cakes. Additional bricks, called *vāstajōtis*, were then prepared in the same manner, with 3 lines drawn over them (to represent the three Vedas?) and the altar was then built up, on an approved geometrical pattern, like an eagle with spreading wings, or like a cart wheel, or in the shape of a man with arms raised in an attitude of prayer.*

Let us now see if the Hittite cylindrical seal is congruent with the Agni-chayana ritual. We see a man (apparently a Kshattriya from his dress) lying beneath the foot of a warrior-priest, whose hand is raised in a significant manner. (Perhaps in the Khēta kingdom, actual humans were immolated; there is a faint evidence of human sacrifices being carried out, near battle-fields, prior to an engagement.) We notice the head of a sheep and also that of an ox. The lotus symbol is there and also the round *ukha* or the fire-pan from which smoke is rising. "It should have a fillet round its neck and a pair of knobs rudely imitating female breasts, like ears."† This desideratum is clearly fulfilled in the Hittite seal.‡ The Vedic texts indicate that stones with natural holes in them should be placed in the fire altar. We seem to see two such stones in front of the priest standing over the heads of the horse and the ox.

On one side of the Khēta seal, is an image of a man with an upturned face and arms raised skyward. He probably represents the Hiranyapurusha (or golden man) referred to in our texts thus: "On the day the altar is to be built, a horse is led to the marked spot and made to plant its foot on a furrow marking the *vēdi*. A lotus leaf is first laid down on the spot where the horse placed its foot. To the south of that (spot) is placed the golden image of a man with the head turned towards the east and the face to the sky." § (The lotus flower in the seal and the image above it are unmistakable).

* The above description is condensed from Dr. P. V. Kane's *History of Dharm Sastra*, (pp. 1246-48).

† This quotation is from L.D. Barnett, "Antiquities of India."

‡ A brick with three lines is also seen on this cylinder stamp, below the Agni.

§ Quotation from Dr. P. V. Kane, *History of Dharmasastra*, P. 1250.

I regret I am unable to identify the symbol on the Khēta seal, of two animals (boars?) lifting up an object like pestle and mortar. In our texts a round pestle and a mortar are mentioned as accessories to the Agni-chayana, (symbolising the linga-yōni concept of the Universe). Alternatively, this may be a depiction of the episode wherein Vishnu is said to have lifted up the world in his Varāha avatār and killed Hiranyāksha.*

Having thus outlined the probable nature and interpretation of the Harappan seals, the question that has to be answered is: what was the purpose of these seals and how were some found in Sumeria? Frankly, the problem is baffling in the extreme; one view (already cited) is that at least some seals represent receipts for payments or goods delivered. Other views describe them as amulets or charms and still others as currency or as personal insignia. It is probable that some seals were used as amulets (hung round the neck?) and some were used to serve as receipts. But the bulk of the seals are probably religious in import, as I have described, and it seems most reasonable to consider them as representing the (Vedic) gods, depicted symbolically on them. How were these 'sacerdotal seals' used in practice?

A theory suggests itself to me, but it is only a theory which has perhaps an air of plausibility about it, but without convincing evidential support. We know that the art of writing was an ancient Indian accomplishment. The Harappan seals prove it; in my view, the credit for evolving a workable syllabary goes to the Vedic Aryans, who were not unfamiliar with the art of writing. Writing implies writing materials. From the very earliest times the Aryans had been using various devices to record their thoughts. Leaves and barks of trees furnished the earliest writing media. The tāla-patra‡ was probably earliest used (specimens

* In this case, the prostrate man beneath, (holding a fish?) will be Hiranyaksha, who took refuge in the deep sea, but was caught.

‡ The talapatra was in wide use in Western Asia as a writing material till comparatively recent times. In Arabia, it was used for recording the sayings of Muhammad and his successors. The Koran was first written in stone or on palm-leaf.

relating to the 1st or 2nd century A.D. have been found by Dr. Luders). The leaves were cut into oblong shape and put between wooden boards, fixed with a thread and a knot. Similarly the inner bark of the Himalayan birch (burj-patra) was often used as writing material. (The famous Bower MSS., 4th Century A.D., is in birch-bark). These barks were also tied in between wooden boards. Plates of bamboo or wood were also used, for writing, especially for documents intended to be often handled. The plates were some-what wedge shaped and each pair of wedges was tied by a string passing through holes at either end. "*The strings were sealed with clay stamped by a signet*"* Later on, leather (or parchment) was used for writing by our ancients, till the time was reached when they were considered as un-clean and were replaced by silk or linen strips, on which much beautiful writing was executed.** Stone and copper plates were also utilised to embody permanent records and numerous specimens of these exist in India, today.

I suggest that some, at least, of the Harappan seals were used to stamp the clay 'bonds' which were put on the bundles of manuscripts, whether leather, bamboo, wood, or birch-bark. It is possible that seals with terse religious symbols were used when stamping manuscripts dealing with sacred rituals or hymns. Other seals might have been used in connection with more profane written texts.

* L. D. Barnett, "Antiquities of India" (p. 228) ; italics mine.

* Paper (made from vegetable fibre) was used in Khotan etc. from 1st century A.D. It gradually spread from this 'hinter land of India' into China and Aryavarta, according to Sir M. A. Stein.

NOTE I TO CHAPTER VIII

HROZNY ON PROTO-INDIANS

Since recording the above reflections on the Indus Valley culture, I had an opportunity of studying in detail the observations of the great archaeologist and linguist, Hrozny, as contained in his impressive work, entitled "Ancient History of Western Asia, India and Crete" The conclusions reached by the author, *apropos* of the Indus Valley civilisation, are so strikingly original in some respects, that I have ventured to summarise them, for the benefit of the reader :

Hrozny calls the authors of the Indus Valley culture 'proto-Indians' and thinks that their script is related to the "hieroglyphic-Hittite", the origin of which should be placed back to the close of the 3rd millennium B.C. "In a common original home, the ancestors of the hieroglyphic-Hittites and the proto-Indians seemed to have formed the first beginnings of hieroglyphic writing, perhaps in the 2nd half of the 3rd millennium B.C. This ancient Indo-European nation, then, split into two branches viz. 'the hieroglyphic-Hittites, who invaded Asia Minor, and the proto-Indians, who came to the Indus Valley.'*" Hrozny thinks that the writings developed independently in the two areas, but "it is not unlikely that the Indo-European hieroglyphic-Hittites commingled with the Hurrians and perhaps the earliest Aryan-Indians, in the 2nd half of the 3rd millennium B.C., *took possession of North West India, importing for the first time, a higher culture of Indian origin.*** The common original home of the hieroglyphic-Hittites and the proto-Indians should be looked for in Syria, East Asia Minor and North Mesopotamia. The widely held supposition, that the Hittites came into Asia Minor *via* the Bosphorus, does not seem tenable".†

* Hrozny - Ancient History of Western Asia, India and Crete—P. 116 et seq.

** Italics mine.

† Incidentally Hrozny adds : "The main part of the Cretan population seems to have originated from Asia Minor, being probably closely connected with the Hittite peoples".

Dealing with the Indus Valley culture, Hrozny describes the usual prominent features of the same, emphasising the use of burnt bricks, in particular.* "Proto-Indian jars are exclusively made on the potter's wheel which have probably come from Western Asia" (p. 163). "The Indian archaeologist, N. G. Mazumdar, uncovered light red or yellowish jars painted with red and black geometrical designs reminiscent of the pottery at Kulli-Nal (in Baluchistan) and in Babylonia. This Indian stratum is prior to the proto-Indian strata and may be contemporaneous with that of Babylonian Jemdet Nasr period. Even in that era, India seems to have belonged to the cultural sphere of Western Asia, as she did in the proto-Indian period. It should be understood that from time immemorial, India, in her cultural and ethnic aspects, was an appendage of Western Asia" (ibid P. 166).

As regards the famous Harappan seals, Hrozny observes as under, and I take the liberty of citing his words, in extract :

"The fact that only flat and not cylinder seals were used in the Indus-Valley speaks, in my opinion, for a greater dependence of this culture upon Syria and Asia Minor, than upon Babylonia."

"Despite the undeniable influence of the Sumerians on the proto-Indian culture, it does not seem possible to accept the suggestions of L. A. Waddell, ("The Indo-Sumerian Seals Deciphered"), that there were close and even lingual links between proto-Indians and the Sumerians". "Similarly, unsuccessful is the attempt of S. Langdon and G. R. Hunter to bring the proto-Indian scripts into connection with Indian Brāhmi which is indisputably derived from the Phoenician script" "The attempt of Mr. C. J. Gadd to read in a certain seal a word as 'putrah', is impossible". "The Spanish Jesuit, Fr. P. Heras has attempted to solve the proto-Indian problem in a rather fantastic way. He assigns arbitrary Dravidic readings to

* "While in Sumer and Akkad, only sun-dried bricks were used in buildings and in Egypt, they did not build of burnt bricks till Roman times, the proto-Indians used exclusively burnt bricks." (Ibid p. 162).

proto-Indian signs and reads them like modern Dravidic." "Similarly, the attempt of P. Meriggi to read the signs as Brāhmi-Dravidi ideograms is a failure". "Von Hevesys' attempt to bring the proto-Indian script into connection with the writings of the Easter Islanders is quite unsuccessful."










In Hrozný's view, since the proto-Indian language and the script were both un-known to archaeologists, in the absence of bilingual records, little progress was possible. "Nothing can be made out of nothing". In these un-inviting circumstances, Hrozný has tried his own hand at solving "this equation of two un-knowns" and the results are set down, below in summary.

"Constant reading and re-reading of the proto-Indian inscriptions made me conscious of the striking similarity of some *proto-Indian signs with those of Hittite hiero-writings* :*

- (1) First, all proto-Indian signs read from right to left and
- (2) they bear close resemblance to Hittite hiero."

On this basis, Hrozný has read some of the proto-Indian signs as below:

Hittite or Proto-Indian, with phonetic values.

	=	Sha
	=	na
	=	a
	=	Shi
	=	e
	=	Sa
	=	sign for a seal
	=	Sign for a big house or palace
	=	Sign for a food vessel or jar

* Italics mine.

𑀮𑀺	= Na-Sha - Temple (?)
𑀮𑀺𑀭	= Sha-shi - Sacrificial fee (Dakshinā ?)
𑀮𑀺	= ta
𑀮𑀺	= ya
𑀮𑀺𑀮𑀺𑀮𑀺	= Na-ta-ya (Hrozný equates this sign with Natarāja, the king of dancers of the Indian pantheon). The reading is from left to right

In all, 125 signs (out of about 500) have been identified by Hrozný, on the basis of the formula which I have indicated, i.e., using hiero-Hittite as the key. He admits that "only a minority of the proto-Indian signs appear to be similar to those of the hiero-Hittite." (The word for 'God' is altogether missing, in the opinion of Hrozný). A greater part of the signs seems to be of specific proto-Indian origin, as per Hrozný. (i.e. un-related to Khēta)

As regards the contents and import of the well-known flat seals, Hrozný originally thought that they portrayed the names of the owners of the seals, but he has now come to the view that the seals *were amulets and that they pictured the names of the deities, figuring as the patron saints of the amulets.** To quote the learned historian :

" These inscriptions are usually accompanied by pictures of sacred animals representing their respective proto-Indian deities. The pictures do not always represent the sacred animal of the god named in the inscription but very often the animal of another god. It is often difficult to decide which animal is dedicated to which god. *But these numerous proto-Indian inscriptions include all major proto-Indian deities.** The whole pantheon of ancient India, which (was) worshipped there some 900 years before the Sanskrit-Indians came to India, reveals itself in a flash

* Italics mine.

before our eyes. We are able to ascertain from them the names of the gods of the proto-Indian nation. And since to our surprise, there seems to appear an *older Aryan, but pre-Sanskrit* component of the ancient Indians, we shall be able to trace back the very interesting development of the Old-Indian religion to about the middle of the 3rd millennium B.C."

Hrozny identifies one such proto-Indian god ('pre-Sanskrit Aryan') as Kushi or Kushiya (a moon god?), whom he compares with the Hurrian Kush(ush) or Kusha or Kushu; another is Unish or Untash (c/f. Hurrian Huntaya); a third is Taku or Takuya, identical with Hittite Tarhu or Tarhunza. A fourth proto-Indian god was Shakush or Shakuntashi "a name reminiscent of Hurrian Shakuya on the one hand, and on the other, the old-Indian name of Sakuna-Shakunti, a kind of larger bird, a bird of augury and the name of the nymph Sakuntalā; Shakush may be a goddess representing Babylonian Ishtar, whose sacred bird was the dove or swallow."

"The most interesting (proto-Indian) deity is Yayash (Yaya, Yesh, Yaish, etc.), whose name is found in over 300 amulets. He was popular with proto-Indians, because he protected them against wild animals. (c/f. the seal showing a man sitting on a tree speaking mockingly to a disappointed tiger.) This seal is an original specimen of the humour of the ancient Orient."

Hrozny interprets two seals (in one of which a net is shown with some script, followed by a man holding a jar in front of a tree; and another showing a lion in front of a pit (?) and looking at a man hidden on a tree, with two others below him holding tree branches) as follows:—

𐎶𐎵𐎶𐎵𐎶𐎵𐎶𐎵


(script on the seals)

"The script: is 'four stone jars for god Yai'. The deity is represented by a divine tree: there is a large sacrificial vessel at the right of which we see the scene, with a man on the tree and a

disappointed tiger departing under it. At the right (seal) are two persons planting in honour of Yai, two trees, the future Protectors of men. The goddess (?) of the tree blesses the work of the men."

In another seal, showing two human foot prints facing each other, as also a ship with a boatman, Hrozny sees a reference to the famous Rik, of Vishnu measuring the Universe with three steps. "Like God Vishnu, Yayac measures the whole universe; the upper foot-print leads him to the Western Continent, to which he sails in the sun-ship; the other foot-print leads him back to the dry land in the East. Thus even the proto-Indian deity, Yayash (Yae) is a proto-type of the old-Indian God, Vishnu". (Yayash is the same as Sanskrit Yati=One who goes, wanders etc.)* "Yaya's sacred animal was the ox, depicted in proto-Indian amulets as an unicorn."

Hrozny's interpretation of the script on the famous 'proto-Siva' or Pasupati seal, (a naked figure in a yōga posture with three horns and surrounded by some animals) is this :—

 = Ya - Shi - Shi - KUC - c - Ya -

i.e. "here is the sacrificial fee for God Kueya" (This script means that the fee had been paid to the appropriate donees and hence the amulet has full potency, according to Hrozny).

The well-known seal, showing a human figure lifting up two tigers, appears to Hronzy as resembling the Gilgamesh motif of Anatolia. Another seal showing a composite figure (half man-half bull) fighting a horned tiger, is the proto-type of the Sumerian Enkidu, according to the learned author. The seal (which I have interpreted elsewhere as representing Agni with

* The old Testament god Yehveh is connected with Yayash, in Hrozny's view, and Moses learnt of this god when staying with the Midianites i.e., "the Aryan state of Mittani which had Indo-Aryan gods".

the eight Agni-chayana priests) is described by Hrozny as featuring "seven demons reminiscent of the seven demons of Babylonia", but Hrozny confesses that he is not sure of the role played by the seven demons, in the proto-Indian seal.

To quote the author.* "This picture of the ancient Indian religion is price-less not only because it acquaints us with the religious ideas of a time, which preceded the Mittani and perhaps even the Vedic period, by 900 years, a time of Indian history which was hidden from our sight up to the recent days, viz., the third millennium B.C. It is surprising to realise what a complicated thing religion of that time was, and how many elements of the later stages of Indian religion there had appeared. The proto-Indian amulets found at Mohenjodaro and Harappa, coming from the third millennium B.C., throw an unexpected light on the origin of Vedic and Indian religion, in general. Their inscriptions make it possible for us to analyze the oldest Indian religion into the elements, thus helping us with a great degree of correctness to recognize the variegated ethnic composition of the proto-Indian nation."

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"The invasion of the proto-Indians, i.e., hieroglyphic-Hittites, or a people closely related to them, together with the Sabarians-Hurrites, and perhaps even the first wave of the Aryan, can be placed in about 2400 B.C., on the evidence of the seals and amulets found in Babylonia and Elam. The laconic proto-Indian inscriptions do not offer any historical data nor do they give us any names of any proto-Indian kings or princes. On the evidence of the present excavations, Harappa seems to be older than Mohenjodaro. Both the cities, and with them the proto-Indian culture, were destroyed during an invasion of a foreign people coming from North-Western India, in about 2000 B.C. The proud and rich proto-Indian cities and economic centres of the caravan routes coming from the West, were uprooted and their population, as the finds of corpses prove, was mercilessly

* Ibid P. 193.

massacred. The cities were not resettled for some millenniums. The invaders who were responsible for the destruction of the ancient Indian culture were, probably, the Dravids whose insignificant remnants have survived in the nation of Brahui, settled in the mountainous Baluchistan. From where these Dravids came to India, it is difficult to say; though it was probably also from the north-west.

“Between the years 2000-1500 B. C. the primitive Dravids, commingled with insignificant remnants of the ancient proto-Indians, dominated over North-Western India. Between 1500 and 1200 B.C., North-Western India was invaded by the second wave of the Aryans, i.e., the Vedic Indians and their other branches, including the Mesopotamian and Syrio-Palestinian Mitanni. In the Sanskrit language of these Indians, that is in some of its cerebral consonants, (e.g. t, d.) there is the apparent influence of the Dravidic languages which have these cerebrals. On this evidence, it has been possible to date the Dravidic invasion before that of the Vedic Indians. According to tradition, the latter found in the land only barbarians; they were called Dasyus, Ml̥chhas.” *

Having cited the views of the distinguished linguist and archaeologist, who is careful not to claim any finality for them, I might be permitted to make the following synoptic observations :

(1) Hrozný believes the authors of the Indus-Valley culture (whom he calls proto-Indians**) to be Aryans allied in race and language to the hieroglyphic-Hittites of Anatolia, who flourished in Asia Minor in the 3rd millennium B.C, according to him.

(2) These proto-Indians had nothing to do with the so-called Dravidians, except that the latter overwhelmed the Indus Valley culture, about 2000 B.C.

* Ibid Pp, 193, 195 & 196.

** Proto is the Sanskrit 'prathama' = first.

(3) The Indus Valley seals are amulets (mainly), and the script on them is related to Indo-European (i.e., Aryan) speech but of the pre-Sanskrit type. According to Hrozny, some of these Indo-Europeans living in the Black and Caspian Sea areas went to Western Asia, while another group concurrently came East and formed the fore-runners of the proto-Indians of the Indus Valley.

(4) The Sanskrit-speaking Aryans came much later to Sapta Sindhu i.e., 500 years after the proto-Indian culture had been destroyed by the Dasyus and the Dravidians.

(5) The amulet seals portray proto-Indian deities, about twenty of whom can be named, in the view of Hrozny. These gods bear considerable resemblance to the ancient Hittite deities on the one hand, and to the "Sanskrit-Aryan" pantheon, on the other.

My own comments can perhaps be put down here, but since I must disavow any claim to be a connoisseur on the subject, my views should be taken only as the hesitant and cautious theories of an amateur. With due deference to the distinguished linguist, I suggest that the proto-Indian problem is not "an equation in two un-knowns". While the script is, unfortunately, still undeciphered, the language should be taken as Sanskrit or its close equivalent. I have shown else-where that the Hittites were none other than emigrant Indo-Aryans and that their culture, language and religion had a strong Aryan impress.* Since Hrozny concedes the close resemblance between Hittite ideography and religion on the one hand, and their proto-Indian counterparts on the other, it seems to follow from my thesis, that the language and motifs of the Indus-Valley seals should be Sanskrit-derived.

The lead given by Hrozny is very welcome, in as much as he has demonstrated the close affinity between Katpatuka and Sapta

* The Hittite Gods are Aryan Gods; the Hittite myths and legends have a strong Aryan base, bearing unmistakable evidence of having travelled from Aryavarta.

Sindhu in language and theogony, (and in script also, by all indications). His pre-conceptions about the origins of the Aryan race and their pristine habitat, have naturally inhibited him from reaching, what appears to me to be, more logical conclusions deducible from the Khēta analogues. Instead of the proto-Indians borrowing from Asia Minor the language, the script and the gods, in all likelihood the situation was just the reverse; Sapta Sindhu was the mother-source of the combined culture, and the Hitties were but the children of the Indus Valley, in remote ancestry. The language originally spoken by these peoples, must have been Sanskrit, or its colloquial variant, as the available evidence strongly bears out. It is now for Indian scholars and researchers to follow up the inspiring lead given by Hrozný and establish the real truth, regarding the genesis and early history of the Indo-Aryan race.

I may end this note with brief remarks on some of Hrozný's seal identifications :

(a) The "seven demons" of Hrozný appear to me to be merely the priests officiating at the Agnishtōma rituals; the Hittite seal, which I have described elsewhere, supports this view.

(b) The so-called nāga motif, noticed by Hrozný (and by Dr. Pusalkar) in some seals, is probably the depiction of Varuna, who in our Purānas, is credited with an umbrella formed of the hood of a cobra.

(c) The theory of a "Tree-god (or goddess) saving man-kind from fierce but disappointed wild animals", can perhaps be equated with the Indian myth of Brahma hiding in the branches of a tree.

(d) Hrozný's interpretation of the seal, containing a fence, a wild animal (a lion, and not a tiger, as stated by Hrozný) and some humans carrying branches of a tree, seems rather laboured. May I suggest, that this seal can bear relation to the Rig Vedic hymn, where there is a reference to lions beings captured in Sapta Sindhu, by means of nets spread over pits dug in the earth, and covered over with twigs and leaves?

NOTE II TO CHAPTER VIII

INDIAN GOTRAS

The following observations are made to reinforce the contentions regarding the very old age of the post-Vedic literature, as adumbrated in these writings.

According to ancient tradition (preserved in the *Srouta Sūtras*, and cited by Panini) the Aryan community was descended from eight sages — Viswāmitra, Jamadagni, Bhāradwāja, Gautama, Atri, Vasishta, Kāśyapa and Agasthya. (The present day descendants of these sages will run into millions, all over India). According to Patanjali, there were originally 88000 sages, all of whom remained celibate, except the eight mentioned above. (*Bashya* IV, 1, 79). Later on these eight gotras bred other gotras (e.g. Brighu gotra generated Vatsa, Bida, Yāska etc.). At a still later stage, these second-line gotras themselves originated new gotras or sub-gotras; (e.g. under Vatsa grew the sub-gotras of Paila, Kāśakritishna, Atisāyana etc.). In course of time, the *Srouta* literature happened to record hundreds of gotras or sub-gotras. "This evolution must have taken many centuries" says Dr. V. S. Agrawala in his "India As Panini Knew It" p. 532). Baudhāyana, Āśwalayana and others show these developments to have happened over countless years, with intricate consequences in religious and social relationship between the various gotra groups. Panini in a famous sutra (II, 1, 19) describes the enumeration of these gotras through the device of prefixing a numeral before the gotra name, to denote the number of generations gone by, since the time of the first progenitor. As per Patanjali's explanation to the sutra, it would appear that, 53 generations of Gautama's had existed prior to Panini's *Ashtadyayi*. This statement is of tremendous significance, for the reason that it refers to a historically verified circumstance, cited by an author who is well known for his careful research and sober assessment of evidence. Assuming an average of 20 years per generation, and taking Panini's age to be 700 B.C. (at the

latest), it is evident that the first historical Gautama should have existed about 1060 years before Panini i.e. in circa 1800 B.C., in Gandhara, the home-land of Panini. It would appear that on the other hand, such a prolific sage as Bhāradwāja had only 21 generations to his credit, when Panini wrote his grammar.

Naturally the historical Gautama, numbered by Panini as the founder, cannot be the same as the sage said to be one of the mind-born sons of Brahma, and referred to in the Vedas and in the early post-Vedic literature. In the same way, the Vasiṣṭha or Agasthya cited as authors of Rig Vedic sukthas cannot be the same as their name-sakes appearing in Valmiki, (*apropos* of the Rāmāyaṇa episodes); nor those figuring as the authors of the Dharma-sūtra (now extant) and of the Tamil Agasthyam, (now, unfortunately, lost). The explanation for this puzzling situation lies in the fact that the names of ancient Vedic sages (whose personalities had got lost in the dim vista of the centuries) became family names, in historical times, and ultimately insignias of selective heredity, (i.e. gotras) which play such a dominant part in Hindu social life, even today.

In support of the contentions regarding the ancient date of post-Vedic literature, reference may also be briefly made to the Vamsa list of teachers found in the late Brāhmana works. Panini refers to the Brāhmanas as time-honoured Sruti literature and calls their authors 'age-old teachers' (Purāṇa Prōktāḥ). These Brāhmanas cite long genealogies of exponents of Brāhmana works, which lists bear the obvious stamp of historical veracity. If accepted at their face value (as they should be) they vouchsafe the authenticity of the claims of the Brāhmanas to be compositions of the hoary past, later only to the Vedas themselves, in chronology. The age of about 2000 B.C. which I have given to them, thus stands vindicated.

CHAPTER IX

THE ARYAN FIGHTER

Some eye brows will no doubt be raised at the title of this chapter; while much had been said *supra* about the Aryan as an adventurous sailor, an enterprising coloniser, and as a purveyor of civilisation, there had been no suggestion that he was also a fighter, that he used force in the propagation of his ideals or interests, in Āryāvarta, if not outside. It would have been, indeed, a great thing if the Aryan race had, from the very beginning of their recorded career, been 'sāthvic' by temperament and wedded to 'ahimsā', in the puritan manner laid down later in our Dharma Sāstras. Unfortunately, facts are otherwise; and they are naturally so, since the Aryan race would not have survived to tell the tale, if they had led a life of mere satyāgraha, if they had refused to meet force by force, or to resort to arms in self-defence. Those were hard times when we first learn of the Aryans in the Rig Veda; the world was not then inured to the arts of peace. On every hand, there were dark forces working against the safety of the infant people. Apart from the aborigines (the primitive hill and forest dwellers, who were none too friendly), there were recalcitrant Aryan communities (the Asuras and the Rākshshasas for instance), who would not let the 'sacrificing' Aryans rest in peace. Even between themselves, the Aryan conformists were swiftly prone to strife, and to forays of conquest or retaliation. The Rig Veda bears ample testimony to the highly temperamental qualities of the early Aryan race. While the Rājanyas were always 'quick on the draw' and set the arrow to the bow at the smallest provocation, even the rishis (who were supposed to hold their mundane passions under rigid control) often showed themselves greatly irascible, like any sinful householder. We may not agree with the uncharitable and some-what speculative remark of Woolley that "the Rig Veda is the epic of the destruction, of one of the great cultures of the ancient world", (i.e., the supposed annihilation* of the highly civilised

* in 1500 B.C.

Indus Valley people, by a semi-barbarous horde of invading nomads;)* but we must concede that our Aryan fore-fathers, were not strictly wedded to a pacific way of life; they would certainly not turn the other cheek, if given a box on one ear. In the Rig Veda, imprecations often alternate with invocations; the sonorous chants of the udgātha are frequently drowned in the fierce curses of the embittered rishis. If I may be permitted a small pun, in the Riks, the ŌMKĀRA of the pious worshippers (the mystic melody of contemplative attunement with the divine,) often stands muted before the HUMKĀRA (the blare of the martial trumpets and the awe-inspiring bellow of the war conches), of the embattled warriors.**

The Vedic Aryans were essentially an athletic and somewhat aggressive people, with all the devotion and deep religious fervour of a spirited race, still in the process of being moulded to maturity. I shall, in this chapter, describe their early techniques and achievements in the arts of war, as evidenced by the Vedic and post-Vedic literature; and to round off the subject, we may travel down the stream of time into the classical age. Starting from the Vedic period (circa 5000 to 2000 B.C.), passing through the Puranic (2000 - 1000 B.C.), we shall end up with the classical age of the Hindus, whose terminus we can conveniently hinge on the

* This is how another highly imaginative writer (Henry Treece in "Fighting Men" Page 16) depicts the alleged Aryan invasion of India:—

"With their long noisy feasts of beef and mutton and goat flesh, ladled to the warriors from bronze cauldrons, their devouring of immense quantities of porridge and cakes swilled down with beer, their loud shouting of hymns to Indra, their many dogs guarding their tents, these Aryans must have seemed like the scourge of a barbarous God, to the gentler and more urbanised people they over-ran so easily. Their favourite sport of chariot-racing and dicing, their strident chanting to the music of the lyre and the reed flute, must have exercised an awful fascination over the trembling folk of Harappa."!

* "To quote the 'Vedic Age' P. 344, "The din of battle is always in the back-ground of the Rig Vedic stage". Even in the Shraddha mantras the orthodox Hindus thus invoke their ancestors: "You are valiant and commanding diverse fighters; you wield potent bows and arrows; you are unbeatable by foes and are the most heroic of warriors".

अस्वीवन्तो गभीराः चित्रसेना इषुवालाः अशुद्धाः सतोवीराः

invasion of Alexander in 325 B.C. It is difficult, naturally, to draw hard lines of distinction among the three ages, especially, the earlier two, which relate to pre-history. The trends and advancements in the arts of war, naturally, overlap the technical divisions of chronology. But the broad classification, in point of time, can be justified on rational grounds, as will be clear from the following pages.

It seems needless to repeat that the Rig Vedic peoples were autochthonous to the Sapta Sindhu or the Land of the Seven Rivers; sometimes, the number of rivers became nine; viz., the Indus and its six tributaries in India (the 'lost river', called by the ancients, Dhrishadvati, being one of them) and the Krumu and the Kuba, (the Kabul and the Kurram) in the Afghan valleys. It will be just as well if a little ancient geography is served up here, indicating the territories dwelt-in by the Vedic Aryans. The four main northern provinces of Āryāvarta, later called janapadas by Yāska and Pānini, are Gāndhāra, Kāpisa, Bāhlika, and Kāmbōja. The first was located in modern Kandahar but extended up to Taxila in India, while Kāpisa* lay to the adjacent north, corresponding to modern Khohistan and Kafiristan. The Hindu-kush, (called Rōhitagiri by the ancients,) separated Kāpisa from Bāhlika, (modern Balkh), which lay on the other side of the mountain range. Kāmbhōja was still further to the north of the regions, lying in the head-waters of the Oxus (or the Yakshu), and comprising most of north Afghanistan, lower Russian Turkestan and eastern Pamirs. In Brāhmana literature, the Uttara-Kurus and the Uttara-Mādras were identified with the Kāmbhōjans. At the northern apex, stood the small janapada of Prakanva,** identifiable with modern Ferghana, and situated in the northern extremities of the Pamir plateau. Sindhu was another area figuring in Vedic literature; it is the same as the

* Kapisa, which is mentioned as a flourishing town by Panini, was destroyed by Cyrus I in the 6th century B.C., according to Pliny. This indicates that Panini lived before the Persian invasion.

** Herodotus's Parikanoi; Panini mentions that Rishi Praskanva founded the community and gave it his name. Modern Khotan-Vedic Gosthana is contiguous to Prakanva.

present Sind-Sagar doab, between the Jhelum and the Indus. Souvira, then the home of many eminent Brahmin families, (including the Bhagavitti, the present Bugti tribe of Baluchis), lay in Upper Sind and in Baluchistan. Brāhmanaka, noted for its warrior Brahmins, (the Brachmanoi of Alexander's time), was south of Souvira. in middle Sind. Paraskara, in lower Sind, corresponds somewhat to the modern Tharparkar Dist., and extended, in olden times, to the Rann* of Kutch. Kachcha was another region near the mouth of the Indus where was situated Barbarika, the port town. To the east of the Indus, were located the following janapadas, viz., (1) Soudhrēya (Sūdra country?) near the region of Umarkot, the later home of the Sodaya Rajpūts (2) Aparārka, on the left bank of the Indus, now identified with Bakkar in Mianwāli Dist. (3) Kākaya, consisting of the present districts of Jhelum, Shahpur and Gujarat (4) Madra, in the Vahika country. with its capital at Sākala, (i.e., Sialkot) and extending from the Ravi to the Jhelum (5) Usināra, (now called Hazāra) between the Chenab and the Ravi, with Shibpura (Shorkot) as its capital (6) Ambastha (Greek Ambastanoi), which was a neighbour of the Usināras (7) Trigarta, consisting of the Kulu (Kulatha or Uluka) and other valleys (with its capital at Nagara) and the regions drained by the head waters of the Ravi, the Beas and the Sutlej (8) Kālakūta, probably, identifiable with Kalka near the Simla hills (9) Kuru, with Hastināpura as its capital; Kurukshētra was situated here (10) Sālva - probably the same as Alwar and North Bikaner and (11) Udumbara in the Kangra valey (12) Yugandharā, located in the modern Ambala Dist., where Jagādhri was an important town (13) Darada (modern Daradistan) north of the Karhmīr valley (14) Kāshmīra, easily identified with the famous valley, and probably, known also as 'Ila' in the Rig Veda, the region where Daksha Prajāpati and Manu reputedly lived at one time,*

It should be mentioned here, that by the time the Yajur Veda was compiled (circa 3000 B.C.), the Aryan tribes had moved into the Indo-Gangetic plain and their heart-land was the Gangā-Yamunā doab. The Rig Vedic Aryans knew about the Gangā

* Rann=Skt Irina i.e., salt waste-land.

** Manali and Mansarovar are not far off from Kashmir.

and the Yamunā only vaguely; for them, the rivers *par excellence* were the Sarasvati* and the Sindhu, or the Indus. The region lying between the two rivers was the holiest of holy grounds, the “punya bhoomi” or the Land of the Gods. Sarasvati, particularly, was called the “best of mothers”. The three principal subdivisions of this heart land were known as Sarasvati (after the famous river, at its source); Bhārathi, the land around Hastināpura, lived in by the Bharatas, who had as their guru, the eminent Visvamithra; and Ila, the Himalayan valley of Kashmir and Kulu.** Apart from the Bharatas, four other principal Aryan clans inhabited Sapta Sindhu and were collectively known as ‘Panchajanāh’. These were the Trusūs, the Anus, the Druhyus, and the Turvāsās or Yādus. There were many other clans, perhaps equally numerous, like the Purus and the Chēdis, occupying various *locales* in the pristine stamping ground of the Aryan race, but their importance in Vedic literature is less prominent.

The climate of the area (even on the plains) must have been cooler in summer than it is now, because of the Rajaputana sea (which later dried up) and the probable higher rain-fall in those ancient times. While the south was parched and dry, the northern parts of Sapta Sindhu were rich in flora and fauna. There were thick forests, filled with all manner of wild beasts† like the bear, the bison, the elephant, the lion; the wild buffalo and many varieties of deer. The deep riparian areas were heavily populated and intensive agriculture was carried on, some times with the aid of irrigation. There were many important industries (as will be indicated in the next chapter) and considerable towns and fortress had sprung up. (We hear of “iron forts” and ‘thousand pillared halls.’)‡ The Aryans had succeeded in domesticating the cow, the buffalo,

* Probably Hakra or the ‘lost river’; Drishadvati was a tributary of Sarasvati. The region between the two rivers was known as Brahmadesa.

** Bhargava in his “Rig Vedic Geography” has argued that Manusū and Ilaspada lay in southern Punjab, near Kurukshetra.

† The tiger being conspicuous by its absence, in the Rig Veda.

‡ In later Rig Veda, and in the Yajur and Atharva Vedas, *ayas* and *shyama ayas* (i.e., iron) are frequently mentioned. Even Indra’s thunder-bolt was visualised as iron-made [R. V. X. 48(3).]

the ass, the horse, the camel and even the wild elephant. The country was well endowed with mineral resources and the climate was generally mild and equable, except in the high mountain areas, where there was perpetual cold. Though divided into numerous clans, (often at variance with each other), the Aryans were a homogeneous people,* worshipping the same gods, (at least, till recusancy lifted up its ugly head among the Panis and the Pārasikas), speaking the same language, and having the same manners and customs, except in the outlying geographical fringes, where some pronounced deviations from Āryadharma were noticed, even in ancient times, as I had occasion to mention earlier. The Aryans took legitimate pride in their innate qualities and achievements, and felt within themselves a mysterious impulse to expand their habitat and to propagate the genius of their race and culture, among those who were less fortunate than themselves. Apart from their early struggles to overcome the disabilities of nature, they had to fight for their survival against diverse hostile elements of a human character. The Rig Veda rings with the sound and fury of these struggles, which were often wars-a-outrance, without much give and take, on either side. Perhaps, we do not see the lighter and more humane side of these conflicts in the 'Riks', even as in the songs of the Old Testament we perceive only the vivid wrath and uncompromising punitive resolve, of the Hebrew 'belly speakers'. The Rig Veda is, certainly, not "the babbling of an infant mind", as an European savant put it, but it is, to a small and incidental extent, the reflection of the adolescent instincts of an energetic race, the expression of the unsophisticated thoughts and feelings of a robust and fast-growing nation, in its first youth.

We may now cast a look at the arms and equipment of the Aryan fighter, in the Vedic etc., ages. It is customary with Western

* "The idea of an empire or universal monarchy was not unknown to Vedic writers. Thus the Aitereya Brahmana (VIII, 4) "Monarchy, at its highest, should have an empire, extending right up to natural boundaries. It should be territorially all-embracing and un-interrupted up-to the very ends (of the country) and establish one state and one Government in the land up-to the seas". Kautilya often refers to a Chakravarthi "holding sway from the Himalayas to the southern seas and ruling a land measuring a thousand yojanas across".

authors to divide the history of ancient man into several ages, viz. the Stone Age, the Age of Bronze (or copper); the Iron Age, and the Age of Gunpowder.* I am not sure, if the Stone Age was not preceded by one in which small clubs and sticks were used as weapons, as is still the case with primitive peoples, who resort to wooden spears and cudgels, in preference to celts and stone hatchets, (which will be rather used in fashioning the wooden weapons). But wooden artifacts are notoriously short-lived, (except in hermetically sealed stone chambers, as in Egypt) and hence, the orthodox four-fold division of Man's culture seems to hold the field. The number of stone weapons, found in India, is considerable and Stone-Age weapons, going back to, perhaps 500,000 B.C., have been identified. The Vedas also seem to hint at the use of stone in warfare ; e.g., Indra's thunder-bolt is lithic in design, but the Rig Vedic Aryans had definitely passed beyond the Stone Age, and after going through the Age of Bronze, had entered the Age of Iron. It is true that, at one time, the finds of bronze and iron artifacts, specifically related to the Vedic age, (circa 5000 B.C. to 2500 B.C.,) were comparatively rare, but the discovery of the so-called Indus-Valley civilisation, and the unearthing of ancient village settlements in various Gangetic and Central Indian localities, has tended, somewhat, to restore the historical perspective.

In this context, I would like to advert to a small controversy which has now gained currency, among Indian historians. The orthodox school, (primed with the theory of an Aryan invasion from abroad), finds it difficult to reconcile these new discoveries of Copper-Age culture, with the settled doctrine of an Aryan intrusion. For example, Sri B. B. Lal, of the Archaeological Survey of India, has argued that the juxta-position of the Mahābhārata sites and the painted grey ware pottery finds in the Gangā-Yamunā doab, may mean that the originators of the Chalcolithic culture, (going back to nearly 2500 B.C.,) might be Aryan tribes, especially those mentioned in the great Bhārata conflict; [and that similar finds in the Malwa and Navdatoli areas might also be attributable to wandering Aryan peoples of the same age]. Dr. Sankalia, (a distinguished

* We can now even go up to the Nuclear Age!

archaeologist) feels some diffidence in accepting the suggestion. To quote him,* "With some plausibility, then, we may attribute the Chalcolithic cultures of the Chambal, Narmada, Tapti and Godavari valleys to some Aryan tribes. All these are tied by common features, and their basic way of life remains the same. This theory would remain unconfirmed, unless and until some writing is found in the excavated habitations, which identifies, at least some of them, with Purāṇic or Vedic tribes". This hesitancy is understandable, since Dr. Sankalia is not able to wean himself away from the well-established postulate of an Aryan invasion of a comparatively recent date.** He, however, dissents from the view of Braidwood and Breasted, that the impetus towards an advanced culture in India came from the Near Eastern Fertile Crescent, (running from Shiraz in Iran, to Syria and the Nilē basin) considered to be the cradle of civilisation in the beginning, by the two professors, a view which has since been considerably modified, even by Braidwood. In the words of Dr. Sankalia, "On the one hand, the view about one or two regions being the birth place of civilisations, is being revised. If it is proved by further work, that some of the primitive or aboriginal tribes are to be credited with the Chalcolithic cultures, as even Sir Mortimer Wheeler seems to think, then, naturally it would imply that these are indigenous or autochthon and not inspired by outside influences". In other words, Dr. Sankalia, following Mortimer Wheeler would, apparently, prefer to consider some non-Aryan aborigines of India as the parents of the Chalcolithic culture of about 2500 B.C., a civilisation in which the people lived in comfortable houses grouped

* "Indian Archaeology and its contribution to Pre-history and Proto-History". P. 85 at seq,

** Not earlier than 1500 B.C., according to most European writers, as already repeatedly stated. Grahame Clark (World Pre-history P. 187) says "A number of sites between the Sutlej and the Upper Ganges and the Jumna rivers (have been found) with a culture defined by a Grey Ware.....having a smooth surface and decorated in black matt paint with patterns. The fact that the P.G. Ware overlies Harappa Ware, occurs at many sites, and occupies approximately the area of the Brahmavarta, has suggested that it relates...to the Aryans. Of the fact of the Aryan conquests, and of the several lines of their advance, traditional sources have no doubt—but it seems certain that these were less disruptive of continuity than the composers of the Epics would have us believe".

in settled village communities and with their quarters full of graceful pottery, including dinner sets and 'table service'. These communities grew, (besides wheat and rice), millets, lentils and grams, which are esculents familiar even now in those areas as the staple food of the people. They wore garments of wool, cotton, and wild silk and decorated themselves with ornaments of semi-precious stones, as well as copper, ivory and gold (occasionally). Their weapons included those made of copper, but iron was probably unknown. Could this culture be the product of the aboriginal hill and forest tribes of these areas? The answer will be clear to those whose judgement is not clouded by pre-conceptions, that those settlements could be none other than those of early Aryan communities, still living in the Copper Age, although their confreres, elsewhere, had advanced to a knowledge of iron. That serious doubt is now being felt by our own West-oriented scholars about the Aryan-invasion theory, is a welcome sign of the vivifying mental breezes, which are now blowing over certain regions of frozen historical thought.

To resume the narrative of the art of war in ancient India : the classical division of martial weapons is two-fold, viz., missiles, and non-missiles.* Missiles can be cast by machines (Yantramukta) like arrows and catapults; they can be hurled by hand (Pānimukta), like the discus and the javelin; those ejected by spells and incantations (Mantramukta) can be of any type and shape; and finally, there were retractable missiles (Mukta Sandhārīta) like lassos, boomerangs and the legendary discus, (or *chakrāyudha*), which reputedly returned to the thrower. The non-missiles were, of course, spears, swords, maces, clubs and battle axes, not to mention the humble human fist.† Pānini applies the generic term *praharāna*, to all arms, as does Kautilya. The grammarian mentions the bow, the spear (*sakti*) the battle axe (*parasvadhā*), long and short lances (*kasu* and *kasutari*), a special javelin called *hēti*, and the sword (*asi*), called also *kaukshēya*, after its scabbard, or *kukshi*.

* There were no anti-missile missiles in those days, although the Puranas are full of incidents, where experts stop a messenger of death, halfway through its fell journey, by another more potent missile.

† Kamandaka, following Sukra, calls 'mantra-warfare' as *Daivik*, and the use of bows etc., as *Asurik*.

The most important weapon of the Aryans was the bow (dhanus), and it assumed a proud national status in Āryāvarta since the science of archery, (Dhanur Vēda,) had the attributes of an Upavēda. Expertise in archery was always the mark of the hero, (the Dhanurdharā).^{*} Later Purāṇas, (the Agni, for instance,) praise the bow with the remark that "of all battles, that in which the bows are used, is the best of all; that in which men fight with barbed instruments, (e. g., a javelin), is tolerable; fighting with swords is low and mean; with bare hands, meanest of all". Wilson deduces from these injunctions, that the reliance on the bow, as the principal weapon, led to the ultimate inferiority of the Aryan fighters, as "the arrow, however formidable as a missile, was a feeble instrument in close combat and its use was calculated, (unwittingly), to impair the courage of the combatant by habituating him to shun, rather than seek, the contiguity of the foe". I am not sure, if the good Professor was not under-estimating the gallantry of the Dhanurdharas. They would not have been crowned with a resplendent halo of heroic glory in Vedic and later literature, if their behaviour, in any way, smacked of the avoidance of personal risk. The explanation is rather different and redounds entirely to the credit of the Rājanyas. As in the case of the Homeric warriors, it is the well-armed leaders, with their costly bronze weapons and fine chariots, who did most of the fighting. In Āryāvarta, the battles often resolved themselves into a series of single combats, while the infantry "often played the role of spectators" as Gordon Childe puts it, somewhat over-simply. In the Iliad, and to some extent in the Egyptian chronicles,** it would seem that the warrior

* Apastamba lays down the following rule for the king: "He must be fully instructed in the three fold (Vedas) and in logic; and learn the management of the chariot and the use of the bow." (II(10))

** "Curiously enough, such a situation obtained in the New World as e.g. in Mexico, (vide, Vol. II Chapter IX.) This does not mean that the foot-soldier was severely looked down upon. In the Satarudriya hymn, Rudra is called Pattinampati i.e., lord of the foot-soldiers. P. C. Chakravarthi somewhat overstates the case against the infantry when he says that, "like the feudal levies of mediaeval Europe, the early Indian foot-soldiers formed an unstable base of the Knightly pyramid and were not an arm capable of offence and defence, having its own organisation."

leader usually spear-headed the attack, while the rank and file played a subsidiary role; the battle was lost or won, according to the fate of the leaders on either side. Looked at from this point of view, we can understand the predilection of the Rājanyas, for chariot-to-chariot duels in which, of course, no quarter would be asked for, or given. The Purāṇas are full of such individual fights of the leading warriors, on either side. It is true, that the "other ranks" also joined in the fray, and played havoc on one another, but the emphasis was pre-eminently on passages-at-arms at the highest level, thus quickening the military decision. A distinguished Indian writer even compares these epic duels of the rathas, with the pitched tank-battles and aerial dog-fights of modern warfare, in which it is the *corps de elite* which is oftenest engaged, and earliest decimated.

The Rig Veda frequently mentions the use of the bow and special prayers were addressed to the gods, for success in its use. For instance, Payu (Rig Veda, VI-75) sends up this graphic prayer: "May we conquer the cattle (of the enemy) with the bow, may we be victorious in battle. This bow-string, drawn tight upon the bow and clearing the way in battle, repeatedly approaches the ear, as if embracing a friend and whispering something agreeable in his ear, as a woman whispers (to her husband)". The Purāṇas, of course, almost apotheosise the bow; in fact, some are divine gifts to man and bear a charmed power. The Vedic literature does not specify the material of which the bow was made but there is a hint that animal horn might have been used, at least as a reinforcement. The Purāṇas are more specific; e.g., the Agni-Purāṇa, (perhaps of the first century B.C. or A.D.,) mentions that the bows were made of metal, horn, or wood. Pāṇini, (8 century B.C.,) calls the bow *kārmuka*, from Sanskrit *karman* = actor (in the battlefield).^{*} According to Kautilya, a *kārmuka* bow was made of the wood of the palmyra tree (*tala*), thus concurring with Panini, who even

^{*} Sayana however derives the word from *Kri*, the name of a tree. It is significant that the names for the bow, the arrow and the bow strings, are the same in Sanskrit and in Avestan, as also in Greek and Latin (e.g., the arrow is called *ishu* in Skt., *esu* in Avestan, and *ios* in Greek).

calls the bow "tala", a name, also, found in the Mahābhārata.* The Purāṇas (e.g., Agni,) however, mention metal bows and those made of mixed iron and horn, sometimes decorated with gold; the purely metallic bow was made of a mixture of copper, iron and silver. But the bows made of bamboo were the best of all, according to the Agni Purāṇa. Pāṇini mentions a special kind of bow called mahāśvasa, which was definitely out-size and equalled $7\frac{1}{2}$ feet in length; but the ordinary bow was 6 feet long, when strung, and this was frequently used as a standard measure; (e.g., 5 bows long meant 30 feet). There were, however, inferior bows of only three cubits' length; the Greek writers mention Puru's archers as using a long bow, one end of which rested on the ground and was held by the archer's foot; this bow shot "long and heavy arrows, against which no shield or breast plate could afford protection".** The Egyptians also used a bow of the same size. The triple-bent bow, (i.e., with a inward bulge at the centre), often seen in Indian sculptures, was also known in Egypt, at the time of the later Dynasties.

The arrows were made of strong reeds and were barbed (patra), and feathered for steady flight. Originally, they were probably fitted with flint or horn heads, but in the Rig Veda, there is mention of metal barbs in the later sūktas; these were probably made of copper and subsequently of iron (ayōmukham). The Veda gives the following description of the early arrow; "The arrow puts on a feathery wing. The horn of the deer is its point; it is bound with the sinews of the cow."† Apparently, poisoned arrows were not prohibited in Vedic times, though their use was frowned upon by later writers, as opposed to the

* The Arthasastra also mentions the use of bamboo and horn; bamboo bows were known as Kodanda. The range of the arrow varied from 360 feet to 240 feet according to the prowess of the bowman; the naracha could travel up to 400 feet.

** Arrian: Alexander.

† Curiously enough, this Rik is repeated by pious Hindus at Shraddha ceremonies, सुपर्णवस्ते मृगो भस्यादन्तो गोमिः सन्नदा

Aryan code of chivalry. In one place, the Veda describes the arrow as made of the sara reed, with its blade of iron and point tipped with poison. The long heavily-barbed arrows (*saptya*), causing extreme pain, were called 'ativyathane' by Pāṇini. Plutarch bears eloquent testimony to the effectiveness of Indian archers, when describing the wound inflicted on Alexander at the Malloi (Mālava) fortress. He writes, "An archer let fly an arrow which transfixes Alexander's cuirass and pierced to the bones around the breast, and there struck fast causing extreme pain..., the iron barb measured four fingers in length and five in breadth". Herodotus, (circa 500 B.C.), mentions Indian archers in Xerxes' army as using iron-tipped arrows, full 3 cubits long, a speciality considered worthy of mention by the Father of History, since iron weapons were then rather rare. The barbs were either spear-shaped (for penetration), or like the crescent moon, with a sharp cutting edge. Others were needle-pointed or serrated with two or more points.* The Purāṇas, the Epics and the Siva-Dhanur-Veda mention a heavy iron arrow, called 'naracha'; perhaps, Curtius refers to this arrow when he says that the Indians used an arrow which was too heavy to be easily manageable. [They were perhaps used against elephants.]

The bow string was made of either fibre or hide, or a mixture of both. The fibre of the mūrva plant was specially praised, as also deer-skin, as suitable for the string, but the fibre of the hemp and the sana was also used. The loose bow was ordinarily slung from the left shoulder or borne aloft in the left hand, in a sort of "ready". While being strung, one end was placed on the ground and pressed against the left knee and the left hand; the string was then slid into the notch at the other end, by the right hand, a practice followed by the ancient Egyptians, and by modern Ādivāsi hunters, (like the Bhils, who are magnificent marksmen).

* Kautilya describes the arrow as 'cutting, rending or piercing.' He also gives three recipes for the preparation of fire-arrows which were known as early as the time of Manu, who roundly condemns them as barbaric. Often the shaft of the arrow bore the name of the archer using it. (Mahabharata, Dronaparva 169 : 36). Kalidasa mentions such a practice in the Raghuvamśa, (III 35).

The quiver was made either of skin or of wickerwork but, occasionally, metal plates were used. The Rig Veda mentions quivers of gold but this would be in the case of princes only, and that too, perhaps, for ceremonial purposes. Usually, a single quiver full of arrows, was slung on the back but sometimes two were so carried, with the aid of a cross belt. To protect the left forearm from abrasion by the string (when released), a leather guard was used in Vedic times but; later, metal gauntlets seem to have been in vogue, (perhaps, partly as an ornament). It is noteworthy that the Egyptians also used a leather guard, after the Indian fashion.*

Regarding the archer's poses, the Agni Purāṇa has the following: "The Sampada attitude is the standing one, with the feet even, the two great toes, ankles and heels being closely opposite each other. The position of standing with the feet 3 spans (2 feet) apart, laying the centre of gravity on the toes and keeping the knees unbent, is the Vaishkha posture. The attitude, in which the knees appear like a flock of geese and in which the archer stands with feet 4 spans apart, is called Mandala"; and so on, for several more positions. The Vedic and Purāṇic literatures are full of the wonderful feats of archery, performed by the ancient heroes, not all of whom were on the orthodox or approved side. For instance, the Rāmāyana and the Mahabharata, weave great fabrics of impassioned poetry over the exploits of Sri Rāma, and of Arjuna, in their respective 'Svayamvara' episodes. It might be recalled, that in the latter case, the Bharata prince had to shoot at a revolving target (fish-shaped), high over his head, by merely sighting it in a reflection

* It may be of interest to mention that the ancient Greeks attributed the discovery of the bow to Apollo, who instructed first the Cretans in, the use of the weapon. [I have mentioned elsewhere the early Aryan settlements in this Mediterranean island.] Historically, the Greeks learnt archery from the Scythians, who probably borrowed the art from Sapta Sindhu. The Greeks did not pull the bow strings, like the Indians and the Persians, to the right ear; they placed the bow before them and pulled the string to the right breast. The Amazons are supposed to have cut off their right breasts, in order to use the bow better!

below and taking aim accordingly, without facing the target.* The art of bowmanship must have reached marvellous heights of efficiency during the Purāṇic times, if we give due credence to the great epics, even after discounting much of the poetic exaggerations in them. The hyperboles in the epics, however, stand on a substratum of fact. In ancient times, a penumbra of legend was usually built round heroic episodes, by poets of all nations, but the legends did always contain a foundation of history. If Plato was reputed to be the son of Apollo, or Alexander, of Zeus, it did not mean that these great figures did not actually exist. Similarly, if our epic heroes were invested with an aura of supernaturalism and were said to "cover the sky with a screen of arrows", or "set fire to a forest or move a hill with a single missile", we should merely take these depictions as the exuberance of poetic fancy and the embroidering of the patently supernatural into the more prosaic fabric of history perhaps, to sustain the semi-divine image of the warriors, on either side.

That incendiary missiles were in vogue, from the earliest times, is probable, but particulars are not available in the Vedas. In the Puranas there is mention of the ejection of boiling or explosive oils, melted resin of the sāl tree (kalpala) and of burning arrows (the so-called Agni-astra), probably, by means of mechanical throwers. In the Mahābhārata, Yudhistira is said to have collected large quantities of resin, tow, and other inflammable stuff, preparatory to the great battle. It is true that our existing sculptures do not show any catapults or battering rams, but their use can be presumed, by some particulars, mentioned by Kautilya, who is a hard realist, never given to indulging in fancies. The Arthasastra lists the following engines of war,** among many others :

* That this sort of archery is not beyond human capacity, will be well known to those who had seen the exhibitions given by some great American bowmen recently, (and put on the screen) where Arjuna's famous *tour-de-force* was almost exactly duplicated, a mirror being used, in place of an oil tank.

** Usually called yantras by ancient writers and divided into *sthira* (immovable) and *chala* (movable) varieties. The former were associated with defences of fortresses. Both the Epics frequently refer to these yantras.

robusta) and lakshi (lac) combined with dungs of an ass, camel, sheep and goat, are highly inflammable (agnidhāranah, i.e., such as keep fire).

“The mixture of the powder of priyala (*chironjia sapida*), the charcoal of avalguja (*oznyza serratula*, *anthelmintica*) madhu-chchishta (wax), and the dung of a horse, ass, camel, and cow is an inflammable powder, to be hurled against the enemy.

“The powder of all the metals (*sarvalōha*) as red as fire, or the mixture of the powder of kinbhi (*gmelia arborea*), sisa (lead) trapu (zinc), mixed with the charcoal, powder of the flowers of paribhadra (deodar), palāsa (*butea frondosa*) and hair, and with oil, wax, and tupertine, is also an inflammable powder.

“A stick of visvāsaghanti painted with the above mixture and wound round with a bark made of hemp, zinc, and lead, is a fire-arrow, to be hurled against the enemy.

“When a fort can be captured by other means, no attempt should be made to set fire to it ; for fire cannot be trusted ; it not only offends gods, but also destroys the people, grains, cattle, gold, raw materials and the like. Also, the acquisition of a fort, with its property all destroyed, is a source of further loss”.*

Of the arms of the second category (*Pānimukta*)- the only ones prominently mentioned by the ancient bards are the javelin and the discus. The former, under the name of ‘sela’, is cited in the Veda and was thrown by the riders from horses and elephants. The *Arthasāstra*, however, names an arrow to be

* Thus the much-maligned Indian Machiavelli! Our modern strategists, (often mouthing pious and hypocritical platitudes,) who would readily send a thousand-bomber night-raid against an undefended city, or drop an inhuman destructive device like the atom bomb on a helpless town and thus kill or maim a hundred thousand innocent human beings in a flash, can well take a lesson from Kautilya's sense of humanity.

thrown by hand, called 'karpana', weighing 7-9 *karshās*,* and allegedly capable of being discharged, by skilled throwers up to a distance of four hundred feet ! The discus or the quoit was a favourite weapon, even in the Veda. It apparently had either a cutting edge, or had pointed projections in its periphery. Under the name of 'chakrāyudha,' it appeared in the Purāṇas and was the special weapon of Vishnu, thus figuring in the spires of Vaishnavite temples.** The javelin frequently figures in post-Vedic literature; it was usually made of bamboo and tipped with steel or copper and balanced with an iron knob at the lower end, above the point. Occasionally, javelins were entirely of iron, sometimes with a small pennon near the blade. It was the conventional arm of the cavalry.

Reserving magical weapons for separate treatment, the non-missile arms mentioned in the Vedas and the technical treatises, may be dealt with. The Arthasāstra lists the following :—†

<i>Name</i>	<i>Commentator's description</i>
1. Sakti (spear)	... a metallic weapon 6 hands (8 feet) long, with leaf-like point.
2. Prāsa	... a two handled weapon, 24 inches long.
3. Kunta	... a wooden rod, 5-7 hands long (the long stick of the Westerners?)
4. Hatka	... a rod with 3 pointed edges (Trisūla?)
5. Bhindivala	... a rod with a heavy top to facilitate a smashing blow. (a club or life preserver?)

* 1 karsha = $\frac{1}{4}$ th of a pala; 8 karshas = 2 palas.

** Orthodox people of the Vaishnavite faith have the Chakra branded on their shoulder; the Saivites use the trident, or Trisula, similarly.

† Pp. 109-113 Arthasastra (Sama Sastry's Translation, III Edn.)

<i>Name</i>	<i>Commentator's description</i>
6. Sūla	... a pointed rod of any length (a sharp spear).
7. Varāhakarna	... a rod, with the point shaped like boar's ears.
8. Kanaya	... a rod, both ends of which were sharp and triangular and which was held in the middle.
9. Karpana	... This is the throwing arrow, mentioned already.
10. Trasika	... A metal weapon like the Prasa, bigger in size.
11. Asi	<p>... This is the sword, of which three varieties are named, viz.,</p> <p>(a) Nistrimsa = a sword with a curved shape. (I have mentioned elsewhere, that this type of sword was frequently used in the Near East. It is the ancestor of the famous Arab scimitar).</p> <p>(b) Mandalāgra = straight sword with a disc guard, and sharp cutting edge.</p> <p>(c) Asiyasthi = a rapier, long and thin, intended for thrust work.</p>

The handles of the swords are said to have been made of the horn of the rhinoceros or of the buffalo or of ivory, or of hard wood. (It is curious that metallic handles are not indicated). In addition to the above weapons, Kautilya mentions the following as razor-like instruments:— the Parasu (the battle axe), Kuthāra (axe), Pattasa (?), Kanitra (a saw like instrument), Kuddala, and Khandacchada (double or big axe). He also describes various kinds of stone missiles, of which Yāntrapashana, (stone thrown by

a revolving wheel) and Goshpāshāna, (stone thrown by slings or catapults) are interesting. It may be mentioned that the Indian spear-men had quite a reputation abroad. Herodotus mentions that the Gāndhārians serving under Xerxes, did particularly smart work with their short spears (the kasutari of Pānini). The Greek, also pays a tribute, as already mentioned, to the Indian archers in the Persian army.

Of the retractable missiles, the lasso and the boomerang are typical. Regarding the latter, Dr. Oppert is of opinion that "the general belief is that the boomerang is a weapon peculiar to the Australians; this is by no means the case. It is well known in many parts of India, particularly the South. The Maravar and Kallar people used to employ it when hunting deer and small game and in the Madras museum, there are three specimens. In the arsenal of the Rājāh of Pudukkottāh, there is always a stock of these sticks, which are made of hard wood. Their Tamil name is "valaithadi" i.e., bent stick. It is thrown with a whirling motion, which causes it to return to the place from which it was thrown and the natives are well acquainted with this "peculiar fact". It is possible that the boomerang travelled from South India to Australia in the very remote past, when some of our people sailed eastward in search of new lands in the Pacific, as I shall describe in a separate chapter.* I may, however, be permitted to give a quotation here from a learned European anthropologist. "The aboriginal tribes in Southern and Western Australia use the same words for I, you, thou, he, we, etc. as the coastal people in South India. They resemble, in many ways, the Madras hill tribes as e.g., in the use of boomerang." **

Apart from the battle axe, (a dreadful weapon of destruction, by all evidence), the most important non-missile was the sword. Copper daggers and short swords, belonging to the Vedic age, have been found over a wide area in India, (including the Indus Valley). They are usually double-edged and ribbed in the middle, to reduce weight and to give added strength, and no guards or quillons are found. It is impossible to say, how the Vedic swords

* See Vol II ch. VIII.

** Encyclopaedia Britannica, Vol III, P. 778 (5th Edn.)

were made. The ordinary Indian sabre, the *asi* of classical Sanskrit literature, (the *acinaces* of the Romans) was a short sword, worn on the left side.* Its single-edge blade had a slight curve but not so much as a scimitar but the point was sharp and double-edged. It was provided with a quillon and a pommel and occasionally, a guard. In historical times, the sword was known as the *khandā* and the Maharattas favoured an outsize type called *kandaraja*.** It is clear, that while the earliest swords were made of copper, a change-over had been made to steel, even in the Vedic times; by about 2500 B.C., all swords were probably made of steel. The *Mahābhārata* mentions certain regions as famous for their excellent steel swords (e.g., *Nishāda* and *Aparānta*).

The scabbard was originally made of wood, (probably for the sake of lightness), and covered with handsome silk cloth (usually crimson). In the *Mrichchakatikā*, the servant offers the sword "sleeping in its pink sheath", to *Samsthānaka*, who takes it by the wrong end and puts it on his shoulder! The sword belt was known as the *mēkhalā* and was usually of leather but metallic chains were sometimes used for making the sword-knots. Apart from the sword, daggers (*mushtikā*) and poniards

* And not on the right, as done by the Romans and the Greeks. The *Hurrians*, *Mithranis*, and *Khetas*, naturally wore the sword, Indian-fashion, as is evident from their statuary. In historical times, swords made in India were highly prized. It is stated that an Arab poet of the Prophet's time used the expression "*Al-Mohammed (Indian Sword)*" at the Prophet's suggestion, in a poem. Other Arab poets used this expression in similies and metaphors. B. K. Sarkar has proved that the secret of making steel blades was learnt by the Arabs from the Persians, who in turn learnt it from the Hindus. The so-called *Damascus* blade, was of India manufacture, in this sense.

"The Egyptian showed no evidence of using iron implements. If they ever made use of steel, there can be no doubt that it was obtained at great cost, from South India. It seems reasonable to hold that the steel of South India found its way to Europe and Egypt. Hebrews had no word for steel. It is probable that the only iron or steel with which the Jews were acquainted, came in the way of commerce from India. There is no evidence that any of the nations of antiquity, beside the Hindus, were acquainted with the art of making steel. The iron called *Damascus* is so called because of its resemblance to the celebrated *Oriental barrels and swords*" says Henry Wilkinson (*Engines of War*).

** One such was the famous *Bhawani*, used by *Sivaji*.

(kuttar) were also in use, as proved by our ancient sculptures going back to the 3rd century B.C.*

Let us now have a look at the defensive arms of the Aryan fighter. The Rig Veda mentions various kinds of armour, like the cuirass (varman), the helmet (sipra) and the hand and leg guards. The deities and the princes are frequently described as wearing golden armour. The principal defence against attack was, of course, the shield. Kautilya** mentions several types of shields, called Vēti, (probably, made of matting), Charma (a shield made of leather), Hastikarna ('elephants ears', a long shield covering the whole body), Tālamūla, (a wooden shield) and Kavāta and Kitika, (perhaps, the round shields). It is likely that the earliest shields were made of leather, as the name charman implies.† Subsequently, hard-wood seems to have been in vogue. The Yukti-Kalpa-Taru defines the charman as "an arm which covers or protects the body; it is of two kinds, according as it is made of wood or hide. It should shield the body, and should be firm, light and tough". The Egyptians and the Grecians used bull's hide with the hair outside, in several folds. Indians, however, used buff hide, which was tougher, and also sometimes that of the rhinoceros, which rendered such folding unnecessary. Subsequently, metal (iron or copper) was introduced either as a re-inforcement or as a substitute.‡

Arrian has the following to say about the Indian shields of Alexander's time.

"In their left hand, they carry bucklers made of undressed ox-hide- Some are equipped with javelins instead of bows, but

* Steel swords of the type described in the Arthasastra, especially asi-yashti and mandalagra, have been found in Tinnevely urn-burials going back to 500 B.C. or more. Swordsman-ship was a fine art in Ancient India. Various poses and exercises, called mandalani, are cited in the Mahabharata; The Agni-Purana mentions 31 manoeuvres in fencing.

** Arthasastra, Pp. 111-112.

† And as is proved by the later practice among other nations.

‡ In the Madras museum we have one made of tortoise shell! In the frescoes at Ajanta, three types of shields are depicted.

all wear a sword which is broad in the blade. This when they engage in close fight, which they do with reluctance, they wield with both hands to fetch down a lustier blow. The horsemen are equipped with two lances and a short buckler”.

The bucklers were short, or even dispensed with, because the more important fighting men wore armour; so much so, their surname became ‘varman’, or “mail clad”.. There are a dozen names in ancient Sanskrit for body armour, which is also called ‘kavacha’ in the Rig Veda. The coat of mail is often used in the Veda as a simile for the giving of personal protection. One sūkta* contains the following: “When the mailed warrior advances in front of the battles, his form is like that of a dark cloud”, indicating perhaps that the armour was usually made of dark steel, but the material is not clearly indicated, (except when ‘golden armour’ is mentioned, probably, as a poetic exaggeration).** In some places, cuirasses of leather are referred to, as “well-stitched”. Dr. Wilson thought that these were quilted jackets (reaching down the knee), as now worn by the Chinese soldiers. The Yajur Veda (vide the Satarudriya hymn, popularly known as Rudra Namakam), addresses Rudra as girt in *cotton-quilt* as well as in *iron armour*. In the Great Epics, the heroes are definitely clad in iron armour (whether of plates or of chain mail, it is not made clear). Some mail-coats were apparently plated over with gold, and some with white steel, and some studded with hundreds of ‘eyes’, or gems. It is mentioned by Arrian that Porus (Puru) was wounded at the battle of the Jhelum on the shoulder, because that place alone was bare, the rest of the body being covered by an excellent coat of mail. § In Sanskrit lexicons, kavacha meant always a mail-coat, either of plates, or of linked-chain. The Arthasāstra throws some light on the practice

* VI, 75.

** A golden armour will almost be a contradiction in terms, in view of the poor strength of the yellow metal. Sayana interprets ‘drapi’ as kavacha, or coat of mail.

§ Curtius adds that the armour of Porus was embellished with gold and silver and that it set off “the supremely majestic person of the King to great advantage.”

in this respect in the 4th Century B.C.† To quote; “*Lohajñika* (a coat of mail, covering the whole body, including head and arms) *Patta*, (a similar mail coat, without cover for arms), *Kavacha*, (a coat of mail, with detachable pieces to cover head, trunk and the arms) and *Sūtraka*, (cover only for the waist, hips and private parts) are varieties of armour made of iron, or of skins, (reinforced with hoofs and horns of tortoises, rhinoceros, bison, elephant or oxen). Likewise, *Sirastrāna* (cover for the head); *Kandatharana* (cover for the neck); *Kurpasa* (cover for the trunk); *Kanchuka* (a coat going down to the knee); *Varavana* (a full coat reaching to the heels), *Patta*, (a coat without arm cover) and *Nragodrika* (steel gloves) are other varieties of armour”. Judging from the practice in historical Hindu periods, it is a legitimate inference that, in most cases, the armour was made of inter-woven chain mail, rather than of plates, except for the helmet and the chest pieces. Leather lining would, of course, have been used to soften the pressure on the skin. (Coats of rhino or buff hide, boiled in oil to toughen them, were also common in the Hindu period of our history).

Before going to the vehicles of war, it will be convenient to dispose of such items as the flag, the trumpet and the war-cry. The flag is of the highest importance in war, not only as an emblem of prestige and homage, but as the rallying point for all armed forces. A feeling of chivalrous devotion to the flag has been predominant among the Aryans from the Vedic times, and the sentiment was not confined to the Kshatriyas, since even important Brahmin families had their individual flags. Speaking of flags, an European writer observes as follows: “However little men may be accustomed to act in concert, it is always possible to unite them in one mass by the conspicuous display of a striking object in a central position, (especially in a field of war)”. The *Rig Veda* alludes to banners repeatedly, and in the *Mahābhārata*, the capture of an enemy's flag is highly commended. Each prince had his own special flag, made probably of cotton cloth or silk; even the gods had their personal pennants.

† *Arthasastra*, P. 112.

A warrior would willingly lose his life to defend his flag on which would be embroidered the emblem of his race. Hanumān, Garuda, the tiger, the lion, the fish, the elephant were favourite insignia; Arjuna adopted Hanumān, Bhishma the palm tree, Duryōdhana the serpent, and Kripacharya the bull. Janaka (who was called "Krisharaja"), is stated to have had the plough as his standard sign, presumably because of its association with Sītādevī.*

The sonal instruments, ancillary to warfare, were several and they rallied the troops, roused their martial fervour, restored their flagging spirits, and put terror into the heart of their enemies. The war-drum is noticed prominently in the Veda, where a rishi says :

"War drum, fill with your sound both heaven and earth, and let all things, fixed and movable, be aware of it. Sound loud against the enemy hosts; animate our prowess; thunder loud and terrify the evil minded. Thou art the first (born) of Indra. The drum sounds repeatedly as a signal and our leaders, mounted on their steeds, assemble".

In the Mahābharata, the war drum was subordinated to the conch, which was supposed to ring down the welkins with its lion-like roar, on the eve of battle. The Pandava princes had their individual conches, with names like Pāñchajanya (Krishna), Dēvadatta (Arjuna), Paundra, (Bhīma) Anantavijaya (Yudhishtira), Sughōsha, (Nakula) and Manipushpaka (Sahadēva). Vyāsa, however, mentions along with the conches, the kettle-drum (bhāri) tabors (panavana) and trumpets (gomukha).

* Colonel Tod has this to say of flags and armourial bearings: (Annals of Rajasthan)

"It is generally admitted that armourial bearings were little known till the period of the Crusades and that they belong to the East. In Europe, these customs (flags and armourial bearings) were not introduced till the period of the Crusades and were copied from the Saracens; while the use of these among the Rajput (i.e., Kshathrya) tribes can be traced to the period anterior to the Trojan war. In the Mahabharata war, twelve hundred years before Christ, we find the hero Bhishma exulting over his trophy, the banner of Arjuna, its field adorned with the figure of Hanuman."

In the Rig Veda, Kushta refers to "those appliances, with which the Aswins sound their conch-shells in the battle, for their share of booty"* . In historical times, the role of the conch was taken over by the trumpet, the rana sringa (war-horn), of which there were various makes and sizes. As regards war cries, these are mentioned in the Rig Veda and in the great Epics. The words used were either religious slogans or the name of the leader, with the words "Jaya" and "Vijaya" being added. In later times, the name of the clan was shouted, (like 'Ranabanga Rathor', of the Marwar kings). In recent wars, the war cry of the Sikhs was "Sat Sri Akal", that of the Gurkhas was "Jai Shankar" or "Jai Mahadēv"; the Mussalmans usually shouted "Allaho Akbar"; the Jat war cry was, "Jat Balavan; Jai Bhagavan".

We now come to the *piece de resistance* of our present narrative viz., the horse, the elephant and the war chariot. I had already indicated the preference of the Rājanyas for fighting chariot-duels, since this was considered to be the most dignified form of warfare for the elect. This does not mean (as had been supposed by Wilson), that the princes were shy of fighting at close quarters. When de-horsed, or when the chariots got broken, the leaders often continued the fight on foot, till the issue was concluded with the death of either duellist. (Sometimes, the Aryan code of chivalry required that the de-charioted warrior should be given another chariot to continue the fight the same day, or even the next). But it must be admitted that the Kshatriya princes normally preferred a dignified death on horse-back or on the ratha, to a rough and tumble on the ground.** There were exceptions: Kumbhakarna never mounted a horse or a chariot; (obviously there were none of his size and tonnage)! Bhīma also delighted to wield his terrible mace *a pied*, failing

* It may be mentioned that the Peruvians and the Mexicans also used the conch-shell, as a war trumpet.

** We can compare the feelings of the ancient heroes to the preference for the Cavalry or the Tank Corps, among the modern officer recruits. To give an analogy, a Georgian dandy would nonchalantly face death in a duel at the point of cold steel, but would refuse to fist it out with an opponent, like country bumpkins.

which he would use his bare muscles to tear his enemy to pieces (as he did with Jarasandha and Dussāsana.)*

I have no hesitation in suggesting that the domesticated horse is an Aryan gift to mankind. There is every indication that the horse was first tamed in Sapta Sindhu, which produced a very fine breed of horses in the Punjab, the Himalayan regions and the plateaus of Bactria and Afghanistan.** The Vedic Aryans were a very horsey people, fond of the animal for riding, chariotry and for racing.† It is rather astonishing that some European scholars should maintain that the Vedic Aryans did not know cavalry warfare. Says Macdonell, "No mention is made of riding in battles"; and Prof. Keith follows suit with the following qualified remark; "Though horse riding was not unknown for other purposes. no mention is made of its use in war." The Rig Veda gives plenty of contrary evidence. In I(16), it is mentioned that the charger with his smooth back had come in response to prayers. Again in I(163), "He (the charger) has horns made of gold (i.e., has golden manes); his feet are iron. The gods have come that they may taste the oblation of him who mounted first of all the swift one". In V(61) occurs this vivid passage: "Where are your horses, where the reins? Rein on nose and *seat on back*; the whip is laid on the flank. The heroes stretch their thighs apart like a woman when a baby is born."‡ The references to horse riding are so numerous, in fact, that it is difficult to particularise. The Aswins always come to their devotees riding on horse-back. In another verse, the rishi prays to Indra that with his grace, the rishi might avoid snares and dangers, like those

* The Mahabharata depicts Yudhishtira as skilled in chariot fighting and Nakula and Sahadeva, in sword-play. Arjuna was a bow-man, *par excellence*.

** "The horse must have been first domesticated in the Eurasian steppes. From there the Indo-Aryans brought the animal both to Europe and Asia." (The Ancient World I - Page 113). The fine Arabian horse is a product evolved originally in Aryavarta.

† The horse was given the highest place in Royal sacrifices also as e.g. in the Aswamedha.

‡ There can be no more graphic description of a ridden war horse, though a simile less biological could have been used!

of a horseman carefully riding over a road. Vishnu and Indra are stated to ride on the clouds, like riders on trained horses. There is mention of a victorious hero returning home on his fleet charger. If horses could be used for riding purposes as conceded by Macdonell and Keith, it stands to reason that they should be used in actual combats also. It seems scarcely worthwhile for a Rājanya, (always touchy about his "status" in fight), to ride up to the battle ground *and then dismount* to do his fell business! The Veda however clears up the point; In VI(47) it is stated, "Our heroes come (for battle) winged with horses"; the context clearly indicates that the mounts were different from the chariot pullers. In another passage occurs the following words: "Heroes with noble horses (svasvāh), eager for battle. selected warriors, call on me (Indra) in combat. Enter into the battle." There is also the famous hymn addressed to the Dadhikras, (the deified war-horse) in V(61), as quoted below, which reinforces my suggestion. "If one, when seated, has with his heel, in excessive urging, or with his whip distressed thee, all those thy woes, with this oblation, I banish". There is specific mention of chargers (i.e., war horses) in Rig Veda VI(46), IX(37), X (6) etc. In one of these verses, a rajarishi prays for a son "who, riding on a brave horse, would successfully meet enemies similarly mounted". In another, the horses are described as galloping on uneven ground and down steep slopes in battle.* To be a chariot horse, a high degree of training could be postulated. For the riding horse also, a similar perfection would be needed to enable it to participate in actual combats.**

Macdonell's view that fighting on horseback was not indulged in by the Vedic warriors, because the bow could not be used in that position is contrary to evidence. The princes are often described in Vedic and Puranic literature as pursuing game with bow and arrow, on horseback. Sculptures in and out of India

* The war-horse is deified in the Veda, under the name of Dadhikras; of course, this deification covers both the courser and the charger.

** In the famous Rig Vedic hymn regarding the destruction of Varasikhas at Hariyuppiya, there is clear reference to "mail clad warriors riding prancing war horses".

(c/f. the Assyrian steles), frequently show the kings as using the bow on horseback, against opponents and wild animals. To quote Wilson; "The Hindus cultivated archery most assiduously and were very Parthians in the use of the bow on horseback." It is significant that Herodotus mentions mounted archers from India fighting in the Persian army.* The Gupta kings are shown in their coins as riding fully caparisoned horses, and holding drawn bows in their hands.

Several words are used in the Veda, besides asva (Iranian aspa) to indicate the horse; vājin (strong); arvant and atya (swift); ajipati (lord of the race); haya (speedy); sapti (runner); etc. Various colours are attributed to the animals, like the dun, the white, the ruddy and the tawny, the spotted, and the dark-brown. The Veda also mentions the areas where good horses were bred in old times: these were the banks of the Sindhu and the Sarasvati, which must have enjoyed much more rainfall and a cooler climate, in olden times, than is the case today.** Rig Veda, X(75), says "The Sindhu is rich in horses, rich in chariots, rich in clothes, rich in gold ornaments." Horses were also obtained from across the Indus, from Gāndhāra, Bāhlika etc. In the time of Pānini, the best horses were obtained from the countries west of the Sindhu; Kautilya confirms this, mentioning Kāmbhoja, Sindhu, Bāhlika and Souvira as the breeding places of fine equines. The Vedas praise a special breed of horses, called "nayut", but details are, unfortunately, lacking. That Saptha Sindhu must have been full of well-tamed horses is evident, not only from the repeated references, directly and indirectly, to this animal but from the number of horses given as presents. (Later on, cows took the lead in this respect as the Āryans moved into Indo-Gangetic plains, where horses were comparatively more

* To quote 'The Vedic Age' P. 355 "It is difficult to agree with scholars who hold that no mention is made (in Vedic literature) of the use of cavalry in war."

** But even today, the Punjab produces the best horses in India, particularly near the Montgomery area.



TO FACE PAGE 324.

ASSYRIAN STELE SHOWING ASURA-BANIPALA HUNTING
LIONS ON HORSE-BACK.

difficult to breed.* In one Dānastuti (VIII, 55) the poet mentions the receiving of 400 mares as a gift.** The Veda frequently mentions the decoration of the horses "with gold and pearl ornaments." Kautilya mentions ornaments for elephants, chariots, and horses under the general name of accessories (*upakaranāni*).

The love for games of skill and chance is something, unfortunately, inbred in the Aryan blood. One has only to read the famous "Gamblers's Lament" in the Rig Veda,† to realise how deeply the dicing bug had bitten into the infant nation. Apart from dicing, the Aryans loved horse-racing, as numerous citations in the Veda testify. The equine competition seems to have been indulged-in mostly for fun, excitement, and perhaps showmanship (before the appreciative eyes of the village belles, doubtless); it also served the purpose of breeding fine mounts, riders and charioteers, and keeping them up to scratch in real performance. In Vedic times, every considerable village seems to have had its race-course, where competitions were held on festival occasions, and prizes given away to the winners. The race course was called *kāstha* or *aji*, and appears to have been a semi-circular one, running upto a mark and back again, in a sweeping arc. Distances were measured out and the guerdons were eagerly competed for. The person instituting the race was called an "ajikrit" (race maker), or *ajipati*. The horses taking part were washed, groomed and decorated. Apparently, the horses were both ridden and driven in these races, since there is a hymn of a charioteer praying for victory (VIII, 69). In the words of Max Muller, the love for horse racing of the Aryans "was the peaceful preparation for the decisive struggle on the battle field, for the joyous wars in which they delighted and which play so large a part in the songs

* In late Vedic literature, the gift of horses to priests is even condemned, [Taitirīa Samhita II 3 (12)] as the horse has 2 rows of teeth!

** The mares were preferred for chariot work as they were more manageable and were allegedly swifter; (VII, 69); the stallion was always welcome as a charger. In the Iliad, the best Greek chariot horses were mares, according to Homer.

† Rig Veda, X, (34).

as well as in the life of the people.”* This mania for chariot-racing was not confined to India. It had reached the Near East where the use of the war-horse and the chariot had been propagated by the Aryan kings in the Fertile Crescent. For those who could afford it in Egypt and the Near East, the light horse-chariot was strictly *a-la-mode*, in travel, as well as in war. The vehicles, constructed of costly imported wood by skilled craftsmen, were equivalent to the luxury automobiles of today. They figured in the tribute of kings and in society wedding presents. Says Gordon Childe: “From the 15th Century B.C., chariot training was an important, even an honoured, profession among the elite, and the most useful, in the Near East”.

The training of the horses must have been developed to a high degree of efficiency even in the Vedic age; but unfortunately no technical details can be culled from the hymns.** Panini helps us little better: he mentions only horse farms and fees for covering mares. Kautilya, however, more than makes up for the deficiency. In a chapter called “The Superintendent of Horses”,† he gives elaborate details regarding the breeding, up-keep and training of horses. Seven varieties are mentioned viz., those for sale (casters?); those recently purchased (trainees?); those captured in war; those locally bred (in royal studs); those sent for help or upkeep (i.e. boarders); those mortgaged to the king; those which were temporarily in the royal stables (e.g., visitors’ horses). Rules were laid down for the construction of stables, (with space for the rolling of horses and with a small park in front, with seats for jockeys, and filled with monkeys, parrots, deer, mongooses, and chattering birds).‡ Regulations were framed for the feeding of

* Chariot racing was also part of Vedic ritual; for instance, in the Vajapeya sacrifice, the yajamana had to run a chariot race and to win in it.

** It is obvious that treatises on horse-training must have existed; we find an Aryan expert named KIKKULI, expounding this science in the Kheta empire in the 15th Century B.C., as narrated elsewhere.

† Pp. 146 et seq. of Arthashastra.

‡ In order to accustom the horses to noises and to the sight and scent of strange animals.

mares, stallions and colts, and for their grooming and veterinary attention (including oil enemas). The following quotations from the Arthasastra may be of interest :

“The breed of Kambhōja, Sindhu, Aratta, and Vanayu counties are the best; those of Bāhlika, Pāpēya, Sauvīra, and Taitala are of middle quality; and the rest, ordinary (avarāh).

“These three sorts may be trained either for war or for riding, according as they are furious (tikshna) mild (bhadra), or stupid or slow (manda).

**

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“The regular training of a horse is its preparation for war (sannahyam karma).

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“Circular movement (valgana), slow movement (nichairgata) jumping (laghana), gallop (dhōrana), and response to signals (narēshtra), are the several forms of riding.

“Six, nine and twelve yōjanas (a day) are the distances (to be traversed) by carriage horses.

“Five, eight and ten yōjanas are the distances (to be traversed) by riding horses.*

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“Trotting according to strength (vikrama), trotting with good breathing (bhadravāsa), and pacing with a load on its back, are the three kinds of trot.

“Trotting according to strength (vikrama), trot combined with circular movement (valgita), ordinary trot (upakantha), middle most speed (upajava), and ordinary speed are also the several kinds of trot (dhara).**

* “A yojana is roughly 5 miles. It is possible that Kautilya's standards assume ‘relays’ in animals. A carriage horse cannot possibly do 12 yojanas or 60 miles a day !

** These five kinds of trotting, called dhara, are frequently mentioned, by later Sanskrit writers on warfare. In the opinion of P. C. Chakravarthi “the list of technical terms, each referring to a special kind of movement testifies to the extreme care with which horses were trained in ancient India.” (The Art of War in Ancient India P. 46.)

"Charioteers shall see to the manufacture of necessary war accoutrements of horses.

"Veterinary surgeons shall apply requisite remedies against undue growth or diminution in the body of horses, and also change the diet of horses, according to changes in season.

"Horses shall be washed, bedaubed with sandal powder, (on the forehead) and *garlanded twice a day*. On new moon days, sacrifice to Bhutas, and on full moon days, the chanting of auspicious hymns, shall be performed. Not only on the ninth day of the month of Asvayuja, but also both at the commencement and close of journeys (yatra), as well as in the time of disease, shall a priest wave lights, invoking blessings on the horses."

Pānini uses the term *āswina* to denote the distances which can be travelled by a horse in one day. The Atharva Veda and the Brahmanas also use a similar term for a like purpose. The distance mentioned in the Atharva Veda seems to be 25 miles; Patanjali indicates four to eight *yōjanas* for a poor and a good animal. Kautilya seems to expect more of the royal stable, as will be seen from the extracts already given.

The equipment of the saddle-horse, as seen in the sculptures, consisted of a thick large padding kept in place by a girth, a croupier, sometimes trellised, and a breast band. The saddle was covered over by a saddle cloth, often of gorgeous patterns. Stirrups were probably used, but they are not *always* evident in the ancient sculptures. As regards the bit, the Agni Purana, mentions five different kinds of snaffles and these are reflected in the sculptures.* Megasthenes has this to say about the Indian rider: "When it is said that an Indian by springing forward in front of a horse can check its speed, this is not true of all riders, but only such as have been trained from boyhood to manage horses; otherwise, the practice is to control the horse by bit and

* "To quote P.C. Chakravarthi (The Art of War in Ancient India, P. 38). "A closer examination of the sculptures (at Sanchi) will reveal the presence of both bitted and unbitted horses. The same phenomenon is noticed at Ajanta also. Similarly, saddles along with stirrups are clearly perceptible in the sculptures at Sanchi."

bridle. They neither gall their tongue by the use of spiked muzzles or torture the roof of the mouth". Concerning the traces and other equipment for draught horses, it would appear that the animals were provided with body-rollers, collars, and bridles. The body-roller was plain and tied where the surcingle is now buckled. The collar was light below and heavy at the top. The idea of a horse collar was apparently borrowed by the Aryans from the bullock's hump. (It may be recalled that Indian bulls* had huge humps, unlike Western cattle). The high, or humped collar was intended to throw the pulling strain well on the chest and shoulder, (as it should) and was adopted later on in Europe. The Egyptian harness saddle (being introduced from India) was naturally fashioned the same way and placed on the highest point on the withers and kept there by a collar and a girth. The Greeks and Assyrians, however, differed from the Indians, in making their horses draw by a yoke, instead of by traces. Gordon Childe, in commenting on the Assyrian practice, which was mainly intended for asses or onagers, observes as below: "The harness (familiar from Sumerian sculpture) employed, was that devised to control the ox. But as these unfortunate equids, (asses and horses) did not possess broad shoulders** like the ox, tractive power was transmitted to the yoke by a breast-band across the animal's throat, against which it had to pull. In so doing, the wretched beast was half-choking itself". Gordon Childe thinks that the horse collar was invented in the Dark Ages in Europe. (circa, 1000 A.D.?). Apparently, he had not seen the old Indian sculptures.

In the orthodox descriptions of Indian army formations, four wings or arms, are usually mentioned. These are the *chatur-angas* (four limbs), viz. *ratha*, *gaja*, *turaga* and *padhāti* (chariots, elephantry, cavalry and infantry). We have dealt with the cavalry and before we go on to the chariots, we may dispose of the *pachyderms*, which were such a special feature of the Indian army and whose use in warfare is admitted on all sides to have spread from *Sapta Sindhu* to other parts of the

* *Bos Indicus*; the humped bull was developed by careful and intensive breeding through hundreds of years prior to the Indus Valley Culture. It is found nowhere else in the world.

** A hump is meant, perhaps.

Western World.* For instance, Roman emperors maintained Indian mahouts to train their elephants. Pyrrhus had a corps of elephantry commanded by Indians. In Hannibal's army of invasion, the elephantry was obtained from the region of the Indus. It may be recalled that Alexander's soldiers were unaccustomed to meet trained elephants in war and their dread of these monsters, in a large measure, accounted for the rebellion which broke out among Alexander's troops and which ultimately resulted in the blood-thirsty Conqueror turning back home reluctantly, down the Sindhu. It is true that the forests of Anatolia and Persia contained elephants, but they were wild and untrained, till late historical times.

In Vedic and Purānic ages, the elephantry held a subordinate position both to the chariots (the vehicle of the leaders), and the cavalry which was largely used by the Kshatriya warriors. But in the Mahābhārata war, the chariot warriors like Bhagadata, Uttara, Dhuryodhana, Anvinda, were seen mounted on elephants. Perhaps after the Bhārata war, the use of elephants somewhat superseded the chariotry arm, which had certain obvious limitations, like the need for good roads and plain level ground for manoeuvres. The chariots were also powerless against a solid line of troops, well-defended with shields and spears.** It may be remembered that the same chariots had created a revolution in warfare a thousand years earlier and enabled the Indo-Aryan

* Riding elephants are mentioned in the Rig Veda. For instance, in R.V. X, 106(6), it is said "Oh Aswins, like a powerful elephant, driven by an ankhusa, kill ye the enemies, bending your bodies."

** The Greek writers mention, with some satisfaction, the failure of the Persian chariots against the Macedonian hoplites, formed up in deep phalanx. "The earliest reference to Indian war elephants, used abroad, is found in the writings of Ctesias (Fragments), who states that Kurush (Cyrus I) of Persia was killed in 528 B.C., while fighting King Amarræus of the Derbices, who was helped by an Indian Ruler who had brought many war elephants with him. Subsequently, Darius and Xerxes organised an elephant corps with Indian mahouts" ("Ancient Persia & Iranian Civilisation" by C. Huart). It would appear that war-chariots disappeared from the Indian military scene sometime in the 6th or 7th Century, A.D. On the other hand, elephants were used in war, till almost modern times. (Both Bana and Hiuen Tsang mention Harsha's elephantry but are significantly silent about chariots). The Arabs, when they invaded Sind, (712 A.D.), encountered no chariots.

Hittites and the Mithranis to dominate, for a time, the Near East.* The Hyksos' invasion of Egypt was also largely helped by the effective use of this new arm, in the wars on the Nile. In the opinion of Sir H. Gordon, the Hyksos, who ruled a large empire for perhaps a 100 years, essentially included Indo-Aryan charioteers in their army, "whose horses introduced enough speed to revolutionise the art of war and change the course of ancient history."**

To come back to elephants: in the welter of harsh speculations among Western writers *apropos* of Indo-Aryan achievements, it is a slight comfort to learn that the fighting elephant is not also given a peregrine status and ultimately traced to the Caucasus or the Russian steppes, like the war horse!† In the Veda, the elephant was called hastin, nāga or kunjara; a trumpeting one was named sundara. The harness for the elephant consisted of a thick padding covered with a fine carpet or embroidered cloth, with a smaller covering for the neck, on which the mahout sat. The saddlery was held in place by girths, cruppers and kicking straps. Strings of bells were put round the neck and a big pendant on the forehead. For tethering by the leg, metallic chains were used. In ancient times, probably, no elaborate howdahs were employed but the Agni Purāṇa mentions a seat "which should be made of wood cut out of trees which emit

* The chariot later on became an important arm of the Army, in Egypt. "They (the Egyptians) adopted this weapon of war, in their wars against the Hyksos. The Asiatic origin of the chariot was preserved in the different words used in its construction, the Canaanite names for its various parts and by the tradition of retaining Asiatics to drive and maintain them". ("The Egyptians" by Cyril Aldred P. 127). The author adds that the hump-backed or Brahmini bull was imported from Asia, probably by ship, into Egypt, after the Hyksos invasion. It is noteworthy that this animal was bred, at that time, only in India. In Egypt the Brahmini bull was considered sacred and was used in sacrifices.

** Hrozný thinks that the Hyksos were none other than the Hurrians or Hurrites: (Ancient History of Western Asia, India and Crete. P. 111).

† There were no elephants in Europe or Russia, even in pre-historic times. Since the Rig Veda frequently mentions the domesticated elephant, it is clear that the Aryans must have been in Sapta Sindhu for many centuries earlier than the Rig Vedic era, which is assumed to be 1500 B.C. by the Westerners.

a milky sap,* fifty fingers broad (about 36 inches) and three cubits long, painted and decorated with gold".^{††} Prof. Wilson thought that only the lower rank of the army rode the elephant, several to an animal, armed with bows or other missiles. Megasthenes says that each elephant carried 3 archers and this is confirmed by Sanskrit writers on the subject.

Kautilya** mentions a Royal Superintendent of Elephants whose duty would be to capture, train, and maintain the elephants. The following extract from the Arthśāstra may be of some interest :—

"Elephants, serviceable in war or for riding, shall be kept inside the fort; and those that are still being tamed, or are of bad temper, shall be kept outside.

"The first and the seventh of the eight divisions of the day are the two bathing times of elephants; the time subsequent to those two periods is for their food; forenoon is the time for their exercise; afternoon is the time for drink; two (out of eight) parts of the night are the time for sleep; one third of the night is spent (by elephants) in taking wakeful rest.

"The summer is the season to capture elephants.

"That which is 20 years old shall be captured.

"Young elephants (bikka), infatuated elephants (mugdha), elephants without tusks, diseased elephants, elephants which suckle their young ones (dhenukā), and female elephants (hastini) shall not be captured.

"(That which is) seven aratnis in height,† nine aratnis in length, ten aratnis in circumference, and is, (as can be inferred from such measurement), 40 years old, is the best.

"That which is 30 years old is of middle class, and that which is 25 years old, is of the lowest class.

* i.e. soft wood.

** Pp. 151 ff. Arthśāstra.

† aratni=cubit or 18 inches.

"Elephants are classified into four kinds: in accordance with the training they are given; that which is tamable (dāmya), that which is trained for war (sannāhya), that which is trained for riding (aupavahya) and rogue elephants (vyala).

"Military training is of seven kinds: drill (upasthāna), turning (samvartana), advancing (samyana), trampling down and killing (vadhāvadha), fighting with other elephants (hastiyuddha), assailing forts and cities (nagarāyanam), and warfare in general.

"A hook, a bamboo staff, and machines (yantra) are instruments (for elephantry).

"Necklaces, such as vajrayanthi and kshurapramālā, and litter and housings are the ornaments of elephants.

"Mail armour (varma), clubs (totra), arrow bags, and machines are war accoutrements.

"Leaving as much as is equal to twice the circumference of the tusk near its root, the rest of the tusks shall be cut off once in $2\frac{1}{2}$ years in the case of elephants born in countries irrigated by rivers (hadijā), and once in 5 years in the case of mountain elephants."

At the battle of river Jhelum, the Greek historians depict Porus [Puru] as fighting furiously on a huge elephant. till the Prince was wounded and captured, with many injuries on his body. Alexander struck a coin, in which he showed Porus on elephant back, turning away from the field of battle, with Alexander on a horse thrusting a spear against the elephant. The details of the fight, even as narrated by the Greek writer, do not seem to justify such an opprobrious depiction of the heroic Puru, (of whom more anon), who would have been the last man to retreat from the field of battle. Arrian's remark on this episode are enlightening.

"His (Puru's) elephant, waxing furious, though not yet wounded, kept charging the ranks of the enemy until the driver, perceiving the king's condition, turned the beast round and fled. The Indian driver, thinking the king wished to alight, made the elephant kneel down in the usual manner. Alexander, supposing

that he (Puru) was dead, ordered his body to be stripped, when the elephant turned upon them in defence of his master and lifting him up placed him once more on its back."

How much importance and value was attached to these animals in war can be gathered from the words of Alexander himself, before he crossed the Hydaspes. In the course of the instructions he gave his followers, he said : "It is the elephant only which makes it impossible for the horses to land on the other bank. The rest of the army can cross over without difficulty." We are told how these huge beasts, at first "crushed the Macedonian phalanx, though in close formation, and created terror among the soldiers of Alexander until they became quite exhausted". Thus, a detailed study of the battle of the Hydaspes shows the superiority of the elephant corps over the other divisions of the army, in normal open fighting. Alexander's victory was largely due to his unconventional and surprise tactics.

And now, for the justly famed war chariots of the Indo-Aryans. The oldest drawing of an Indian ratha comes, curiously enough, from an Egyptian painting, that of the reign of Thothmes III of Egypt (circa 1495 B.C.), who has been justly called the Egyptian Napoleon. The chariot is mentioned as a present from a vanquished people, whose name is glyphed 'Rath-no,'* apparently the Sanskrit Rathina or charioteers, who have been indentified by Henry Torrens, in his book, "The Scope and Uses of Military Literature," with the Vedic Aryans of the Punjab. In style and make, the ratha bears close resemblance to the war-chariots shown in the Sanchi bas-reliefs i.e., a car on two wheels, with a curricule body, open behind, and drawn by two horses. The Egyptian chariot had only one pole with a yoke at the end, whereas the Sanchi sculpture shows a long curving pole in the centre with two short shafts on either side reaching up to the flanks, with no yoke, thus making it an admirable vehicle for two horses. To those who wonder how Indian 'Sūtas' appeared at the Nile in 1500 B.C., a little history may be useful. Egypt, which was getting over-civilised, slothful and somewhat decadent,

* The Rath-no or Ratenu ruled over some territories in North Syria, before they were over-run. There was a province under the Egyptian kings called Rath-n-no, in Syria, for some time.

was rudely shaken in 1670 B.C., by the invasion of a people, whom Manetho calls the Hyksos (Sikahs?), probably, a wandering tribe of Semites powerfully supported by the Phoenicians and the Khētas. For over a hundred years they ruled Egypt, with indifferent political success, leaving behind a legacy of scornful hatred for them and their allies, the Khētas of Katpatuka, and probably also, the ass-nomadic Hebrews, who are invariably pictured by the Egyptians as robbers and cut-throats, in their drawings. Although their role in Egyptian history was none too creditable, the Hyksos made some lasting contributions to the culture of the Nile Valley; they introduced the use of iron instruments, wheeled vehicles, and the horse chariot. Prior to their arrival, the war horse was unknown in North Africa; in fact, it was a rarity outside India (and possibly also Persia and the Pamirs), till about 2000 B.C. I had mentioned elsewhere, how the Mithranis propagated the use of the horse in the Near East, particularly in the Khēta empire, where horse chariots were apparently first used after 1700 B.C. Even in the time of King Suppiluliumus, the number of chariots used in any campaign was not large. In one battle, the Khēta texts mention the use of 80 chariots, probably a large assemblage at that time. Ramesses II, however, cites the Khētas as using 2500 chariots in the battle of Kadesh and each chariot is said to have carried three men.* It is generally considered that the Egyptian monarch unconsciously exaggerated the figures of his enemy's army.

In India, the chariots were ordinarily drawn by a pair of horses, in the matching of which great pride and care were taken; one-horse chaises were probably not unknown but were not consi-

* Ramessu boastfully claims to have achieved a wonderful feat of arms against the Khetas, at Kadesh, in a poem recorded by him, vide excerpt below:

"When His Majesty turned to look behind him,
He found around him 2500 chariots on his outward way
All the light corps of the vile Khetas
From Arwad, from Mansu, from Pitasa,
From Kesh-Kesh, from Arwena and Khatu-Dhana,
There were three men in each chariot and they were united.
I came on them quicker than fire and I gave them a taste of my hand.
I caused them to plunge in water even as the crocodiles,
I was staying among them; every fallen one lay still."

dered worthy of serious mention in the Veda.* In the Rāmāyana, there is a reference to cars drawn by asses but these were not common. Pāṇini mentions several kinds of cars according to the animal used; e.g., camels, oxen, etc. (It may be remembered that before the horse was introduced in the Near East, the chariots with heavy spokeless wheels, were drawn by asses or onagers). The Rig Veda mentions a three-shafted chariot, (after the manner sculptured later), thus portrayed in a hymn : "We have placed you, Dasras, in golden three-shafted chariots". In the case of princes, the chariots had usually four horses; sometimes, the extra pair was put in front but more generally it was placed on either side of the original two-some. In the Rig Veda, a distinction was drawn between the chariot (ratha) and a cart (anas), but the difference in structure is not mentioned except that the 'kha' (nave-hole) in the chariot was bigger than in the anas. It is possible that, as we occasionally see even today in Sind and Rajaputana, in the inferior vehicle, the axle was firmly wedged into the nave and the axle turned with the wheel, the body having holed projections, to take in the axle.

The ordinary chariot (in Vedic times) had two wheels, the latter consisting of a rim, (pavi) fellies, (pradhi) spokes, (ara) and a nave or hub, (nabhya), having an axle hole, called 'kha'. The rim and the fellies together constituted the nēmi; lynch pins called ani, were thrust at the extremities of the axle. Solid wheels are also mentioned. The axle (aksha) was sometimes made of a special wood called aratu; (metallic axles came much later). The body of the chariot, called kosa, rested on the axle, with seats, called vandhura or garta, provided on it. The pole was at right angles to the axle and was called isa or prauga, and it carried the yoke, to which the pair of horses was harnessed, as described earlier. The horses were, of coarse, tied to the yoke both at the neck and at the shoulder by traces fastened to a bar of wood placed at right angles to the pole. The traces were called rasmi and rasana, and

* From the most ancient times, it was considered *infra dig* to ride a carriage drawn by one animal. Says the Veda, "Men come not with one horse (carriage), to sacred sessions; thus they obtain no honour in assemblies." (Rig Veda I 9(1)) In the famous Marriage-Hymn, the bride rides to her husband's home, in a two-some vahana.

the girths were named kakshya. The horses were driven by reins and mouth-bits, as indicated earlier.

Even five steeds were sometimes attached to a single chariot, and asses (gārdhabha) and mules, (aswatari) could be used as substitutes. For humbler folk, the ox was the draught animal, as its name 'anadvah' implies. Single steeds were put in between shafts and tied in with traces. In the war-chariot, the driver stood on the right and the warriors on the left: the latter could rest on the seats provided, while shooting off his arrows. This type of chariot had a movable stand or carrier, called rathavāhana, on which it rested when not in use. According to Āpastamba's Sulba Sāstra (6th Century B.C.), the following were the dimensions of a standard chariot :

pole : 11 feet
 axle : $6\frac{1}{2}$ feet
 yoke : 5 feet $4\frac{1}{2}$ inches.

The entire vehicle was made of wood, except for the rim which was originally of copper, but later, of iron. (As mentioned *supra*, even axles were made of wood of a special quality.) It is likely that the Vedic chariots had large sythe-like blades attached to the axles, rendering enemy approach dangerous ; the Rig Veda mentions "golden wheels, armed with iron weapons".* The number of spokes in the wheel varied from six to twelve or even more. (The Egyptian and Assyrian chariots, which were based on Indian models, had six spokes).

Both war and peace chariots were often profusely decorated and this taste was borrowed by the Assyrians and the Persians, whose vehicles, were sometimes, completely covered with ornamentation and often inlaid with gold and silver and special woods.** The Egyptian records at Karnak of 15th Century B.C., mention "that

* The Atharva Veda (VI, 125) contains a beautiful hymn addressed to the war-chariot which is described as "the bolt of Indra, the Child of Mitra etc. etc".

** In the Veda, it is said that Palasa wood, among others, was used in chariot making. This tree was un-known in Russia or Europe, thus proving that the art was native to India. All special woods used elsewhere, were obtained from India.

from the "Naharains (i.e., the Mithranis,) were obtained 30 chariots worked with gold and silver; and with painted poles carrying a splendid canopy". A competent archaeologist believes that these chariots must have been made in India and transported by sea and by river, to the Mittani kingdom. Pānini mentions the upholstery of chariots, which was of three varieties viz., *vastra*, *kambala* and *charmana*, i.e. cloth (silk or cotton), wool, and leather. Chariots covered with *pāndu kambala** (crimson woollen blankets) were specially prized and these were imported from *Gāndhāra*, the land of the purple dye. Leopard and tiger skins were sometimes used and the chariots so decorated, were called *draipa* and *vaiyāgra* (vide *Atharva Veda*, IV-8). Such chariots were popular during the epic period and in historical times, as befitting the use of royalty. The *Mahābhārata* mentions that among the presents brought to *Yudhishtira* from the *Prāchya* (eastern) country, were *vaiyāgra* chariots valued at 100 *kārshāpanas* each. Naturally there were inferior kinds of vehicles, used by the commonalty, called *sarvpathina*.

Kautilya lays down specifications for chariots in use in his time. I quote these, along with certain other interesting regulations framed by this shrewd Prime Minister of the Maurya :

"The best chariot shall measure 10 *purushas* (1 *purusha* is equal to 6 or 4 *aratnis*) in height and 12 *purushas* in width**. After this model, 7 more chariots, with width decreasing by one *purusha* successively down to a chariot of 6 *purushas* in width, shall be constructed. He (the Superintendent of Chariots) shall also construct chariots of gods (*dēvaratha*), festal chariots (*push-yaratha*), battle chariots (*sangrāmikā*), travelling chariots (*pariyānikā*), chariots used in assailing an enemy's stronghold† (*parpurābhiyānikā*), and training chariots.

"He shall also examine the efficiency in the training of troops in shooting arrows, in hurling clubs and cudgels, in

* Strictly speaking 'Pandu' should mean white, or pale-yellow.

** The measurements seem to refer to chariot-carriers, or *ratha vahanas*.

† Movable battering rams, perhaps.

wearing mail armour, in other equipment; in chariot-riding, in fighting seated on a chariot, and in controlling chariot horses.

"The latter, (the Superintendent) shall know the exact strength or weakness of hereditary troops (*maula*), hired troops (*bhrta*), the corporate body of troops (*srēni*), as well as that of the army of friendly or unfriendly kings, and of the wild tribes.

"He shall be thoroughly familiar with the nature of fighting in low grounds, of open battle, of fraudulent attack, of fighting under the cover of entrenchment (*khanakayuddha*), or from heights (*ākāsayuddha*), and of fighting during the day and night, besides the drill necessary for such warfare.

"He shall also know what kind of ground is more advantageous to his own army, what time is more favourable, what the strength of the enemy is, how to sow dissension in an enemy's army, how to collect his own scattered forces, how to scatter the compact body of an enemy's army, how to assail a fortress, and when to make a general advance.

"Being ever mindful of the discipline which his army has to maintain, not merely in camping and marching, but in the thick of battle, he shall designate each of the regiments (*vyuha*), by the names of trumpets, banners, or flags."

Some controversy surrounds the term 'pariskanda', used in the Vedic literature (e.g. Atharva Veda: *Vrātya* hymn). Pāṇini is clear, however, that the name applied to the two foot-soldiers who ran on either side of the chariot, to prevent the tyres from slipping off.* In actual battle, they helped the warrior in the chariot to combat the enemy. The Greek writers also mention them; Arrian says that each chariot was drawn by 4 horses and carried 6 men, of whom 2 were shield bearers, 2 charioteers and two archers posted on each side of the chariot. The two shield bearers seem to be the *pariskandas*, also called *chakra rakshas*,

* Hopkins thinks that these "cakra-rakshas were often younger members of the noble clans who were thus winning the name of heroes by useful service to a renowned knight. The knight's adversaries were generally of his own class. If he finds no foeman worthy of his steel, he rushes about the field till he meets one."

mentioned above. The grammarian also refers to the cart-wright, who is to make ready the various wooden parts of the chariot before assembling them (called *bandhana*) and then fitting the upholstery. By the term 'pavi', he refers to the chariot tyre, and such expressions as *su-pavi* (well-tyred) and *su-chakra* (fine-wheeled) were apparently common in Vedic times. As already mentioned, the tyres or rims were made of metal, and fitted by heat-expansion process, as done even to-day.*

A word about the charioteer (*sārathi*): he was not a mere flunkey or the petty *jehu*, he is today. In Vedic and Purāṇic times, he was held in great respect and was treated as a real companion of the warrior. Even a prince like Krishna did not think it beneath his dignity to act as the driver of Arjuna's chariot; in fact, Arjuna acted as the charioteer of Uttara. The *sārathi* was not only responsible for the safety of the warrior by his good horse-management, but he was also expected to advice his principal on occasions of need. "His true art" says Hopkins, "consisted in wheeling and turning, in bringing the car rapidly about, so as to attack the enemy with such speed from all quarters that the chariot seemed to advance from all sides at once". We can say that the prince and his charioteer were of almost equal rank in the profession of arms and only very trusted and capable men were selected as charioteers of kings. It may be recollected in that the Homeric poems, the charioteers move in terms of great familiarity with their principals. In Egypt, a driver is depicted as talking very freely with the Great Ramesses, in a picture about which Sir G. Wilkinson observes: "We may conclude that the office (of charioteer) in Egypt and in Greece was filled by persons of consideration, who were worthy of the friendship they enjoyed."†

The number of chariots engaged in the local wars of the Rājanyas must have been very considerable, even in Vedic times. The *Amarakōsa* mentions that every battalion (*vāhini*) of about

* In post Vedic times, four wheeled chariots were not un-common. The great Epics frequently refer to such vehicles.

† We may compare the post to those of modern grooms-in-waiting at Royal households, which are usually held by ranking noblemen.

500 foot soldiers must have 81 chariots and two hundred and forty cavalry. Three such battalions formed a pritana; three pritanas equalled a chamu and three chamus, an anikini, and ten anikinis a complete Akshauhini or Army Corps. The strength of an akshauhini will, therefore, be :

21870	—	chariots
„	—	elephants
65610	—	horses
109350	—	infantry

This would mean that, along with supporting personnel, an akshauhini will have almost half a million men, and an enormous number of animals. It is rather doubtful, if any king in the Vedic age could muster such a fighting force.* Even in Puranic times, such a huge army would have been a very doubtful proposition. In any case, it is inconceivable that something like 22000 chariots could have been assembled in a single battle-field. It should be remembered, in this connection, that the war chariots were not driven straight from their peace-time parks to the fighting ground. They were put on 4 wheeled chariot carriers drawn by oxen, (the rathavāhanā mentioned earlier), and taken to the battle-field.** The akshauhini must have been largely a theoretical concept, till perhaps the Imperial dynasty of the Mauryas came into being. The Greek writers enumerate the Mauryan Army at 600,000 infantry, 30,000 cavalry, 8000 chariots and over 9000 elephants.†

* Not even in the Battle of the Ten Kings, could an akshauhini have been assembled. Incidentally, this battle is given various dates as below : Triveda ; 4778 B.C. C. V. Vaidya : 5000 B.C. : B. C. Ketkar. 7009 B.C. Dr. A. C. Das 20,000 B.C.

** The measurements given by Kautilya for the 4 wheelers, obviously apply to these rathavahanas, as mentioned by me.

† Porus was credited with 30000 infantry, 4000 cavalry, 300 chariots and 200 elephants. Agramnes, the King of the Gangaridae was said to possess 200,000 foot, 80,000 horses, 8000 chariots and 6000 elephants. According to Megasthenes, the Pandae (Pandyas) had 150,000 infantry and 500 elephants. King Harsha had over 60,000 elephants. Krishna Deva Raya had a huge regiment of elephants, in the XVI Centy : A.D..

The organisation of the army included a camel corps. Camels are referred to in the Vedas as being native to the soil but there is no specific mention of fighting camels. Camels were of two varieties, the single-humped one, now seen in upper India and in Arabia, (where it was probably introduced from India,) and the double humped (Bactrian,) which was later introduced in the Near East and North Africa. Pānini is familiar with the camel corps, known in his time as *austraka* (*ushtra* = camel) or *ushtra-sadi*. A mixed corps of camels and mules (*asvatari*), was known as *ushtra-vāni*. It would appear that the camels were mostly used as army transports over the difficult sandy terrain, frequently come across in the Indus basin and in Rajaputana.

As already mentioned, the conventional arrangement of the Indian army in post-Vedic times, was in the form of four wings, *ratha*, *gaja*, *turaga* and *padāti*, and this was closely observed both in the Purānic and in the classical times. Pānini, in addition to this four fold division, makes a special mention of the camel corps and the mixed camel and mule transport regiments. It is obvious that a standing army, (which was the pattern in the historical period,) required a hierarchy of civil officials, as is evidenced by the *Arthasāstra*. Pānini indicates an Accounts Service, one unit of which was attached to each of the various wings; e.g., *ratha-ganaka* was an accountant of the chariot-wing, and a *hasti-ganaka*, that of the elephantry. We have no clear knowledge as to how the fighting forces were organised in Vedic times. As has been already explained, all the four traditional wings were in employ in the Vedic period, but no clear cut manuals of instruction are traceable in Vedic literature. Probably, each prince had his own permanent body of armed retainers, belonging to the Rājanya families; feudal military service was also attached, in all likelihood, to landed property, the donees being expected to provide troops in an emergency. It is a permissible presumption that there was a tribal defence organisation of the nature mentioned

in the great poems, especially since, in the Epic period, relations (jñāthi) usually fought together, clan by clan.*

In Pānini's age, each kingdom had its own standing army, which was reinforced by mercenaries and by levies from vassal states in times of need. The commander-in-chief was called *sēnāpati* and the common soldiers, *sainya* or *sainika*. The commanders of the respective wings were named after their charges; e.g., the cavalry commander was known as *asvapati*, and the commander of the chariots, *ratha-pati*. A soldier on the march was called *senāchara*, in a general way; but individual soldiers were named after their principal weapon; e.g., the bowman was termed *dhanushka*, the swordsman *asika*, and the wielder of the dreaded battle-axe, *parasvādhika*. In post-Pāninian period, the female of the species was also encountered, in army circles. Patanjali mentions women-soldiers, such as *sakthiki*, *yashtiki*, etc. It would appear that in Kautilya's time (4th Century B. C.), it was quite *de rigueur* to employ Amazonian troops in the royal household. Dr. R. L. Mitra thinks that this practice might be a Mauryan innovation, but there is no indication in the *Arthasāstra* to the effect that it was a new fangled idea.**

* "The Epics and the Jataka tales mention a six-fold division of the Army (*shadanga*), 'presumably, according to the area of recruitment' in the opinion of P. C. Chakravarthi. The six categories were 1). *Maula* or hereditary troops; 2) *Bhrta* or mercenaries; 3) *Sreni* or levies from guilds; 4) *Suhrid-balam* or troops from allies; 5) *Dirshad-balam* or troops won over from the enemy; 6) and *Atavi-balam* i.e., wild forest tribes. Guild levies were considered to be only of medium value; the wild tribes were found to be doubtful assets and deserters from the enemy, thoroughly untrust-worthy.

** Curtius mentions with awe, and some disapprobation, the crowds of women soldiers accompanying the Mauryan King (Chandragupta). "When the king condescends to show himself, his attendants carry silver clusters and perfume with incense all the roads he travels by. The King travels in a golden palanquin garnished with pearls, which dangle all round it, and he is robed in fine muslin embroidered in purple and gold. Behind his palanquin, follow men-at-arms and bodyguards carrying parrots in golden cages. His principal exercise is hunting. He rides on horseback when making short journeys, but for distant expeditions, he rides on an elephant all covered in trappings of gold. He is accompanied by an army of female servants, some in golden palanquins; *crowds of armed women surround him* and even when he shoots game from a machan, two or three armed women stand by his side." "Of these women in the bodyguards, some are in chariots; some on horseback and some on elephants and they are equipped with weapons of all kinds, as if they were going on a campaign" says Megasthenes. It is extremely significant that apart from South-east Asia, even in Peru and Mexico, the monarchs were served by female bodyguards.

The smallest unit in the army was the patti, which consisted of one chariot, one elephant, three cavalry and three infantry. Next in order came the sēnēmukha, the gulma, and the gana, each a multiple by three, of the previous unit. (The higher groups, commencing with the vahini have already been mentioned), The Manusmṛiti, (circa 1000 B.C.), contains the enumeration which is generally followed by subsequent writers on the subject, but in the Mahābhārata, the names and quantities are varied substantially. The Epic states that the two armies at Kurukshētra consisted of 11 Kaurava akshauhiniḥ, and 7 Pāṇḍava ones, i.e., about 10 million men in all, not to mention the quadrupeds! It is doubtful if the whole of India contained that much population, in circa 1500 B.C.!

The sēnapāti was ranked by Kautilya along with the purōhita, the minister, and the heir-apparent, and was entitled to a salary of 48,000 panas per annum, an amount, says the author, which should keep him free from all temptation. The chiefs of Military Corporations and the commandants of the various wings, would receive 8000 panas each. The royal chariot driver, the chief physician to the army, and the chief carpenter earned 2000 panas. All heads of departments like the reader of omens, the astrologer-royal etc., got 1000 panas; trained soldiers, accounts clerks and writers got 250 panas; ordinary artisans, trumpet blowers etc., were entitled to only 120 panas a year but they would concurrently receive free rations,*

Apart from the four traditional wings, there were certain departments of the army, which require special notice. Two of the most important were the commissariat and the treasury, so much so that the army was called shadanga, or six-winged. It is said that when the Pāṇḍavas marched to Kurukshētra, they were followed by carts and transports of various descriptions, the treasury, the armoury, the yantras or war-machines and the medical units. There are frequent references, even in late Vedic

* In the Mahabharata (Sabha-parva 5-48), the King is asked "Do you give your troops the sanctioned wages and rations in time? You know the irritation caused to troops by delaying wages and withholding rations?" It has been calculated that a pana was equivalent to an English shilling, at that time.

literature, to physicians and surgeons accompanying the marching forces. All artisans and non-combatants in the Pāṇḍava army are said to have been well trained and paid regular salaries, (so that they may not "live on the country", to use an euphemism.) Similar descriptions are given of the Kuru forces, special emphasis being laid on the care of the sick and the wounded, human and otherwise. The Arthasāstra contains a whole section relating to military arrangements. Detailed provisions are given regarding encampment, marching, forms of fighting, selections of battle-fields, the arrangement of troops, and the scientific marshalling of the fighting strength. It will be outside the scope of this chapter to deal in detail with these topics, but a brief review of Kautilya's wise injunctions may be attempted, as conveying a picture of the fighting technique of the Aryan peoples in the early centuries of the historical Hindu period (5th or 4th Century B.C.).*

Camps: In consultation with the astrologer, the leader (nāyaka) should measure out the required camp, with four gateways, six roads and nine sections. The quarters of the king (1000 bows** long and 500 wide), occupying one section, should be surrounded with ditches and parapets, and a watch tower, a small temple being also provided. The entire army should be disposed of in the remaining 8 sections and all drinking and gambling should be prohibited. Entry and exit should be regulated by passes.

Marching: §

A careful plan of march with the names of villages *en route* and supplies available, should be made out in advance. Rations to be carried should be double the quantity required in any emergency. The leader (nāyaka) should lead the army; the king and the harem should be in the centre; the cavalry on the sides, and on the extremities the elephants and the infantry with the commissariat following. On all sides, scouts, "habituated to forest life" should be posted. A low-quality army can march

* Arthasastra : Pp. 391 et. seq.

** A bow was equal to 6 feet.

§ P. 392 *ibid.*

one yōjana (roughly 5 miles) a day; a middling one $1\frac{1}{2}$ yōjanas and the best troops 2 yōjanas. In case of obstruction, the army should adopt suitable formations; (crocodile, cartlike, diamond-shaped etc.) to resist attack; water should be crossed by means of elephants, on planks erected on wooden pillars, boats and boat-bridges, rafts, coracles, etc., according to suitability. In barren country, adequate supplies of water and fodder should be ensured *en route*.

*Attack : **

Kautilya mentions various forms of attack, open and surreptitious; by straight forward fighting or by ambushes (sattra), or by infiltration of spies and traitors.† The enemy could also be starved out by the capture of his commissariat, or he may be attacked at night, when not expecting an onslaught. Words of faith and encouragement should be addressed to the soldiers to infuse fighting fervour in them. I quote :

“The beginning of an attack is the time for treacherous fights.

“As to an open or fair fight, a virtuous king should call his army together and specifying the place and time of battle, address them thus : ‘I am a paid servant like yourselves, this country is to be enjoyed (by me) together with you; you have to strike the enemy as specified by me.’

“His minister and priest should also encourage the army by saying thus :

‘It is declared in the Vedas that the goal which is reached by sacrificers, after performing the final ablutions in sacrifices, in which the priests have been duly paid for, is the very goal which brave men are destined to attain. About this there are verses such as this :

‘Beyond those places which Brahmans, desirous of getting into heaven, attain together with their sacrificial instruments by

* P. 395 *ibid* & P. 396.

† “V column” methods were quite approved by Kautilya.

performing a number of sacrifices, or by practising penance, are the places which brave men, losing life in good battles, are destined to attain immediately'.

"Astrologers and other followers of the king should infuse spirit into his army by pointing out the impregnable nature of the array of his army, his power to associate with gods and his omniscience; and they should at the same time frighten the enemy. The day before the battle, the king should fast and lie down on his chariot with weapons. He should also make oblations into the fire, pronouncing the mantras of the Atharvana Veda, and cause prayers to be offered for the good of the victors as well as of those who attain to heaven by dying in the battle-field. He should also submit his person to Brahmans, for blessing and dressing; he should make the central portion of his army consist of such men as are noted for their bravery, skill, high birth and loyalty and as are not displeased with the rewards and honours bestowed on them. The place that is to be occupied by the king is that portion of the army which is composed of his father, sons, brothers and other men, skilled in using weapons *and having no flags and head-dress*. He should mount an elephant or a chariot, if the army consists mostly of horses; or he may mount that kind of animal, of which the army is mostly composed or which is the most skilfully trained. One who is disguised like the king should attend to the work of arraying the army.

"After having pleased the army with rewards and honour, the commander-in-chief should address it and say :

'A hundred thousand (panas) for slaying the king (of the enemy); fifty thousand for slaying the commander-in-chief, and the heir-apparent; ten thousand for slaying the chief of the brave; five thousand for destroying an elephant or a chariot; a thousand for killing a horse; a hundred (panas) for slaying the chief of the infantry; twenty for bringing a head; and twice the pay in addition to whatever is seized.' This information should be made known to the leaders of every group of ten (men).

"Physicians with surgical instruments (sastra), machines, remedial oils and cloth in their hands: and women, with prepared food and beverage, should stand behind, uttering encouraging words to the fighting men".

Marshalling of fighting forces :

The choice of the battle ground should rest with oneself as far as possible, so that the initiative may not go to the enemy. The field of battle should be suited to the type of forces disposed of by the attacker. Some extracts (from the Arthashastra)* may be apposite :—

“ That which is even, splendidly firm, free from mounds and pits made by wheels and footprints of beasts, not offering obstructions to the axle, free from trees, plants, creepers and trunks of trees, not wet, and free from pits, ant-hills, sand and thorns is the ground for chariots.

“ That which is uneven with assailable hills and valleys, which has trees that can be pulled down and plants that can be torn, and which is full of muddy soil free from thorns, is the ground for elephants.

“ That which is free from thorns, not very uneven, but very expansive, is an excellent ground for the infantry.

“ That which is doubly expansive, free from mud, water and roots of trees and which is devoid of piercing gravel, is an excellent ground for horses.

“ That which possesses dust, muddy soil, water, grass and weeds, and which is free from thorns (known as dog's teeth), and obstructions from the branches of big trees, is an excellent ground for elephants.

“ That which contains lakes, which is free from mounds and wet lands, and which affords space for turning, is an excellent ground for chariots ”.

Each wing of the army should be given the work most suited for it. The following were the guiding principles in this respect according to Kautilya. To quote :—

“ Exploration of occupied positions, camps and forests ; holding strategic positions, water-fording places, and positions agreeable with the direction of the wind and the sun ; destruction

* P. 370, *ibid.*

or protection of the commissariat and of troops arriving afresh ; supervision of the discipline of the army, lengthening the line of the army ; protecting the sides of the army ; first attack ; dispersion (of the enemy's army); trampling it down; defence; seizing ; letting out ; causing the army to take a different direction ; carrying the treasury and the princes ; falling against the rear of the enemy ; chasing the timid ; pursuit ; and concentration, these constitute the work of horses.

"Marching in the front ; preparing the roads, camping grounds and path for bringing water ; protecting the sides ; firm- standing, fording and entering into water while crossing pools of water and ascending from them ; forced entrance into impregnable places ; setting, or quenching, the fire ; the subjugation of one of the four constituents of the army ; gathering the dispersed army : breaking a compact army ; protection against dangers ; trampling down (the enemy's army) ; frightening and driving it ; spectacular demonstration ; seizing ; abandoning ; destruction of walls, gates and towers ; and carrying the treasury—these constitute the work of elephants."

Distinctive array of the troops :

The Mauryan army must have reached a high standard of discipline and must have been trained in battle formations to a fine degree of perfection, if the sage counsels of Kautilya had been really reflected in practice.* The following quotation will serve as an illustration to substantiate the claim made for the Mauryan army which, under Chandra Gupta, drove all invaders from Indian soil and under Asoka, brought the whole of India, (except the extreme South,) plus Afghanistan and Baluchistan under Mauryan rule.

** "Having detached the flower of the army and kept it on a favourable position, not visible (to the enemy), the commander-in-chief and the leader should array the forces such that the space between any two men is sama (14 angulas); cavalry with three

* Herodotus definitely states that the Indian army was the strongest in the world, in his time.

** P. 400 *ibid.*

samas: chariots with four samas; and elephants with twice or thrice as much space (as between any two chariots). With such an array free to move and having no confusion, one should fight. Archers should be stationed at the distance of three bows (from one line to another); the cavalry at the distance of three bows; and chariots or elephants, at the distance of five bows.

“The intervening space (anikasandhi) between wings, flanks and front of the army, should be five bows. There must be three men to oppose a horse (pratiyōddhārāh); fifteen men or five horses to oppose a chariot or an elephant; and as many as (fifteen) servants (pādagōpa) for a horse, a chariot, and an elephant, should be maintained.”

Battle tactics :

In the battle field, the army commander should aim at the most favourable disposition of his forces from a tactical point of view. This plan of attack (or the order of battle) was called ‘vyūha’ and was considered to be a most important preliminary to the actual clash of arms. It may be recalled that in the Mahābhārata war, the respective armies were marshalled by experts; the Kaurava forces by Bhishma, and those of the Pāndavas, by Dhrishtadyumna, son of Drupada. The trick of taking the enemy in the rear was well appreciated. Kautilya recommends that at a river ford, the enemy holding it should be taken at the rear by crossing over secretly at a different point down the river.* It may be mentioned that in the battle of River Jhelum, Puru, who was unassailable by frontal attack, was successfully taken in the rear by Alexander’s cavalry which crossed the river a long way down, and then marched up the other bank at night, to the rear of Puru’s forces. These tactics of Alexander were apparently opposed to the Indian code of chivalry of the time, which required that all attacks should be made during the day, and that too in an open manner. Night attacks

* Is it possible that the great minister was drawing on the lessons learnt in the wars with Alexander? However, there is no mention of any Greek (Yavana) intruders in the Arthashastra, or reference to foreign techniques or equipment.

and attacks on sleeping troops were considered thoroughly reprehensible, according to the highest principles of Aryan warfare. It is clear that Puru (Porus) did not expect that Alexander would steal a march over him at dead of night. It must be added, however, that Kautilya himself was guided solely by the quantum of the results achieved by military tactics; he believed that in warfare, the end justified the means, however unorthodox the latter might be, to the traditionalists of his day. Curiously enough, the Rig Veda seems to echo the views, expounded later by the Mauryan statesman. The earliest battle in human history of which there is any record, is the Battle of the Ten Kings described in the III, (63,) of the Veda.* The warring camps were composed of the Tritsus and the Bharathās respectively, who were arrayed on either bank of a mighty river, probably the Parushni. The Purōhita of the Tritsus was Vasishta, and of the Bharathas, Viswamitra, the father of Sakuntalā, the mother of the legendary Bharatha. Under their chief priest's advice, the Tritsus made a secret crossing of the river and achieved a surprise assault on the Bharathas, who were apparently routed in the fight. The Veda is full of ambuscades, feints and surprises; deceit and trickery are not excluded from the armoury of the Rig Vedic fighters, as the hymns on the Dēva-Asura Sangrāma amply bear out. Kūtayudha had taken its foot-hold even in the great Bhārata war itself, and Asvaththāma cites Vedic authority for the use of poison, arson and fraud, in warfare. It may be remembered that Kali-yuga had commenced on the eve of the great fight.

The vyūhas (the marshalling of forces on a battle field), mentioned in the Mahābhārata are several. A pinlike array is mentioned, as well as one called vajra, (diamond like). A third one is krauncharuna, and the fourth, garuda. We hear of arrays called half-moon (ardha-chandra), srugataka, sarvathobhadra and makara (crocodile). Every vyuha was supposed to be resorted to in special circumstances connected with the quality and quantity of troops, nature of ground, and the direction from which the enemy's attack was apprehended. Some quotations from the Arthasāstra** may be of interest on this subject.

* Its date was circa 5000 B.C., according to my thesis.

** Pp. 401/405 *ibid*.

"An array of elephants, chariots and horses, mixed together, may also be made; at the extremities of the circle (array), elephants; and on the flanks, horses, and principal chariots. The array, in which the front is occupied by elephants, the flanks by chariots and the wings by horses, is an array which can break the centre of the enemy's army; the reverse of this can harass the extremities of the enemy's army; an array of elephants may also be made; the front by such elephants as are trained for war; the flanks by such as are trained for riding; and the wings by rogue elephants; in an array of horses, the front by horses with mail armour; and the flanks and wings by horses without armour. In an array of infantry, men dressed in mail armour in front, archers in the rear, and men without armour on the wings; and horses on the wings, elephants on the flanks, and chariots in front; other changes may also be made so as to oppose the enemy's army successfully.

"The best army is that which consists of strong infantry and of such elephants and horses as are noted for their breed, birth, strength, youth, vitality, capacity to run even in old age, fury, skill, firmness, magnanimity, obedience and good habits.

"Wings and front, capable to turn (against an enemy,) is what is called a snake-like array (bhōga); the two wings, the two flanks, the front and the reserve (form an array,) according to the school of Brihaspati. The principal forms of the array of the army, such as that like a staff, like a snake, like a circle, and in detached order are varieties of the above two forms of the array consisting of wings, flanks and front.

"Stationing the army so as to stand abreast, is called a staff-like array (danda).

"Stationing the army in a line so that one may follow the other, is called a snake-like array (bhōga).

"Stationing the army so as to face all the directions, is called a circle-like array (mandala).

"Detached arrangement of the army into small bodies so as to enable each to act for itself, is termed an array in detached order (asamhata).

"For every ten members of each of the constituents of the army, there must be one commander, called *pādika*; ten *pādikas* under a *sēnāpati*; ten *sēnāpatīs* under a *nāyaka* (leader).

"The constituents of the array of the army should be called after the names of trumpet-sounds, flags and ensigns. Achievement of success in arranging the constituents of the army, in gathering the forces, in camping, in marching, in turning back, in making onslaughts and in the array of equal strength, depends upon the place and time of action."

The Sastras on war:

In the Vedas, we do not find strong evidence of the existence of any moral code regulating war. In the post-Vedic times, however, such a code had been evolved and embodied in the *Dharmasāstras*, and the *Sutras*. The caste system relegated the task of fighting to the *Kshatriyas**, who were normally expected to die in a battlefield; (a rule which was luckily often disregarded in practice, as otherwise, the race would have soon become extinct). The warrior's code required that a *Kshatriya*, challenged in battle, should never refuse to fight, whatever the odds against him; *niti* and *sourya*, (justice and valour,) were the watchwords of this fighting caste. The emphasis on *niti* (moral principles) was duly reflected in the lofty injunctions found in the *Dharmasāstras*, particularly of *Manu*, (circa, 1000 B. C.) Two kinds of conflicts were envisaged; the *Dharmayuddha* and the *Kūṭayuddha*. The former adhered to the ethics of the military profession, while the latter did not; the former believed in a fair and open fight (*prakāśayuddha*), while the latter would permit of subterfuges and deceit (*mantra-yuddha*). In *Dharmayuddha*, the preliminaries of the fight were settled before-hand by the principal combatants and no ruses or feints were employable. In *Kūṭayuddha*, the reverse was the case, and surprise and camouflage, aided by witch-craft, were the *sine qua non* of success. In Vedic literature, there is plenty of evidence of *Kūṭayuddha*

* "Kautilya thought that *Kshatriya* fighters were the best. Although the Brahmin warriors fought equally well, "they could be won over by the foe falling at their feet", according to the Mauryan statesman.

practices, not always confined to the Asuras and Rākshasas, though the latter were often charged in the hymns, with breaking the moral code, idolised by the Dēva worshippers. The salient features of Dharmayuddha, as visualised by the Dharmasāstras, and the treatise-writers, (writing mainly between the 7th and 2nd centuries B.C., Sukra, and Kautilya and Kāmandaka for example) can be summarised thus:—

(a) Firstly, an ambassador (whose person was inviolable) should be sent to the enemy with an ultimatum, a procedure which is still respected in International Law. (The Greeks apparently copied this maxim from the Persians, who naturally borrowed it from Āryāvarta].

(b) War was undertaken only as a *pis aller*: other methods, (sāma and dāna among them), were first to be tried out. Diplomatic pourparlers and compromise talks were always to be preferred to physical force.

(c) Once war became inevitable, the Kshattriya warrior should go all out to win it, putting his faith in god and the counsels of his ministers, (and astrologers!). On the day before the battle, the king should fast, sleep in his chariot with his arms by his side, and on waking up, salute the gods with suitable prayers, including those sanctified in the Atharvana hymns, (particularly, that in Book XIX-13, addressed to Indra). The Purohita himself would bless the breast-plate and put it on the king; (c/f. the practice of the European Padres blessing the troops on the eve of their setting out for battle.)*

(d) The following principles had to be observed by a Kshattriya (as laid down in the Mahābhārata, Sāntiparva):

1. A warrior in armour must not fight with a Kshattriya who is not clad in a coat of mail.

* “Aswalayana Grihya Sutra III(12) says, “When a battle is about to begin, the Purohita should stand to the west of the King and mutter appropriate mantras; he should also bless the horses.” One Purohita may serve several Kings; for example, Jala Jati-Karnya was Purohita for Kasi, Videha and Kosala, in semi-historical times.

2. One should fight only one enemy (at a time), and cease fighting when the opponent becomes disabled.

3. If the enemy is clad in mail, his opponent should put on armour.

4. A cavalry soldier should not attack a chariot-warrior; but a chariot warrior could attack a chariot-warrior. Similarly, a horse-warrior could resist another horse-warrior. [The general rule was that warriors should fight only with their equals.]

5. Poisoned or barbed arrows should not be used.

6. If a Brahmin enters the field to bring about peace between the contesting parties, both should stop fighting. And no injury should be inflicted on such a Brahmin.

7. One should never lament over a hero killed in battle, for he becomes the 'lord of thousands.'

8. Aged men, women, children, the retreating, or one who holds a straw in his lips (a sign of animal-like submission), as a token of unconditional surrender, should not be killed.

9. The panic-stricken and scattered foe should not be pursued hotly.

10. No one should kill the sleepy, or the thirsty, or the fatigued, or one whose armour had slipped, a peaceful citizen walking along the road, one engaged in eating or drinking, the imbecile and the insane, one who had gone out of the camp to buy provisions, a camp follower, menials and the guards at the gates.

Manu had laid down the broad principles of fair fighting in his famous Institutes, as early as the 10th Century B.C. The following extracts from the Institutes, may be of interest to the modern students of International Law :—

1. The people who live by using nets and traps (i.e forest dwellers) or those who live by using fire or poison, should not be attacked.

2. The following also should not be attacked in any circumstances:—those who have got down from their seats; those who are naked; those who are unarmed; those asleep; those whose faces are cast down in defeat;

3. those who are mere camp followers (i.e., non-combatants), those who are only on-lookers; those who have been seriously hurt; those suffering intense physical pain; those who have lost their weapons;

4. those who surrender themselves and those who are running away from the battle field.

5. Places of worship, gardens and fruit trees should remain undisturbed and agriculturists should not suffer molestation.

That these injunctions of the Law-givers were generally observed, is confirmed by various authorities who have also mentioned, with disapproval, deviations from the Dharmaic code. For instance, in the Tamil book, *Silappadikāram*, (2nd century B.C.?) it is mentioned that the Chola and the Pandya kings expressed their disapprobation of the action of the Chera ruler, Senguttuvan, in making prisoner certain soldiers, who were escaping from the battle-field in the guise of ascetics, Brahmins and beggars. Megathanes adds his own testimony:—

“Whereas among other nations it is usual in the contest of war to ravage the soil, among the Indians on the contrary, by whom husband men are regarded as a class that is sacred and inviolable, the tillers of the soil, even when battle is raging in the neighbourhood, are undisturbed by any sense of danger, for the combatants on either side make carnage of each other but allow those engaged in husbandry to remain quite unmolested”. The *Arthasāstra* also severely frowns upon any tendency to injure the cultivators or ruin the crops, during martial operations.*

* The *Sukraniti* (IV, 7) lays down very strict rules for army discipline. “The troops should not indulge in unnecessary violence, rivalry, procrastination with the enemy. They should never enter a village without a permit and should never obtain provisions on credit. They should keep their persons, the camps, and the arms, clean and tidy. Those disobeying these regulations should be severely punished.”

Elaborate regulations existed regarding the treatment of prisoners of war. In the later Vedic period, (that of the Brāhmanas), the practice was to banish those made captive; the alternative was for the prisoner to work for his captor for a year, after which he became automatically free. Women prisoners were enjoined to be treated with special courtesy; either they could marry men of their choice in the conqueror's country, if they were maidens, or could ask to be sent home under proper escort (Mahābhārata-Sāntiparva). The drama, 'Mudrā-Rākshasa' mentions that Chānakya himself set free all the prisoners captured by Chandra-gupta's forces. Samudra-gupta, in his famous pillar inscription at Allahabad, details how certain southern rulers captured by him, were set free, and some of their northern confreres taken into the Imperial service, either as high officials or as *tributaries*, of their own free choice.

Strict injunctions covered the treatment of the wounded soldiers and animals of the opponent. The Mahābhārata lays down that wounded enemy soldiers should be either sent home (if walking cases), or given all possible medical attention. If they got cured, they should be set at liberty. To nurse the wounded, women experts were appointed and all camps were expected to have a full complement of medical men with the requisite medicaments and accessories. The great Vyāsa would even ask the captor to go among the enemy wounded, and talk to, and comfort, them, "holding their hands affectionately"; truly a very high standard of humanitarianism in 1500 B.C.! There is clear mention of what is now known as 'beating the retreat'. At dusk-fall, all fighting would be stopped, by blowing soft bugles and by sounding the muffled drums, on both sides. The contending armies would then leave the battle-field, so that the bearers, women nurses, and the doctors on both sides could go over the blood-sodden ground and recover their own wounded and help to cremate the dead. A strict truce was to be observed during this occasion and no display of passion was allowed, except for the wailing of the (bereaved) females, some of whom would always accompany the marching armies. According to Clausewitz (the famous German military expert), when the armies thus retired for rest at night, all feelings of asperity and animosity were to be

laid aside and both the armies "were expected to behave like allies"; (apparently, an essay in super-optimism, as recent history only too well demonstrates!).

A word about booty and war-prizes may be useful. It was a fundamental rule that immovable property did not belong to the victor as of right; only such things as chariots and animals, war material and stores, treasure and the harem, belonged to the conquering forces. The king would personally examine all such captured wealth and would then keep a part, (usually a sixth),* for himself and distribute the rest among his army, according to rank. The captured women were specially looked after by the King, who would deal with them as indicated previously.

I may now end this Chapter with two quotations, one from the Arthasāstra, and the other from Griffith's "Specimen of Indian Poetry". Talking of conquered territories, the Mauryan statesman thus describes 'Dharmavijaya' (or the rule of military justice).**

"The territory which he (the conqueror) acquires may be of three kinds: that which is newly acquired, that which is recovered (from an usurper), and that which is inherited.

"Having acquired a new territory, he should cover the enemy's vices with his own virtues, and the enemy's virtues by doubling his own virtues, by strict observance of his own duties, by attending to his works, by bestowing honours. He should follow the friends and leaders of the people. He should give rewards, as promised, to those who deserted the enemy for his cause; he should also offer rewards to them as often as they render help to him; for whoever fails to fulfil his promises, becomes untrustworthy, both to his own, and his enemy's, people. Whoever acts against the will of the people, will also become unreliable. He should adopt the same mode of life, the same dress, language, and customs as those of the conquered people. He should follow the people in their faith, with which they celebrate their national, religious and congregational festivals and amusements.

* In Europe it was 20%, the so called 'Royal fifth'.

** Arthasastra Bk. XIII, Ch. V, (Pp. 437 ff.)

He should always hold religious life in high esteem. Learned men, orators, charitable and brave persons, should be favoured with gifts of land and money, and with remission of taxes. He should release all the prisoners, and afford help to the miserable, helpless, and diseased persons. He should compel born thieves, as well as the *mlēchchhās*, to change their habitations often and reside in diverse places.* Such of his chief officers in charge of the forts, country parts, and the army, and ministers, and priests, as are found to have been in conspiracy with the enemy, should also be compelled to have their habitations in different places on the borders of the enemy's country. Such renegades of his own country as are captured along with the enemy should be made to reside in remote corners.**

“Having recovered a lost territory, he should hide those vices of his, owing to which he lost it. and increase those virtues by which he recovered it.

“With regard to the inherited territory, he should cover the vices of his father, and display his own virtues.

“He should initiate the observance of all those customs, which though righteous and practised by others, are not observed in his own country, and give no room for the practice of whatever is unrighteous, though observed by others”.

Griffith beautifully summarises the chivalrous Indians' Code of War, in these lines (translated from Manu)

‘Let the soldier good in battle, never guilefully conceal,

(Wherewithal to smite the unwary) in his staff the treacherous
steel :

* To prevent formation of gangs of unruly persons, and to save the peaceful in-habitants, from molestation.

** Chanakya shows a lot of forbearance and humanity here ! It would appear that much of Queen Victoria's Proclamation had been anticipated 20 centuries earlier. One cannot but admire this supreme realist's far-sighted and warm compassion, for the down-fallen, and the misguided.

Let him scorn to barb his javelin : let the valiant never
anoint

With full poison, his fierce arrows, never put fire upon the
point.

In his car or on his war-horse, should he chance his foe to
meet,

Let him smite not, if he find him lighted down upon his
feet ;

Let him spare one standing suppliant, with his closed hands
raised on high ;

Spare him if he sink exhausted, spare him if for life he
crave ;

Spare him crying out for mercy, ' take me for I am thine
slave '.

Still remembering his duty, never let the soldier smite.

One unarmed, defenceless, mourning for one fallen in the
fight ;

Never strike the sadly wounded ; never let the brave attack.

One by sudden terror smitten, turning in base flight his
back ”.

NOTE I TO CHAPTER IX

ĀYUDHAJIVI SANGHAS

A peculiar feature of ancient Indian military tradition is the existence, apparently from very remote times, of Āyudhajivi Sanghas, (which may be loosely translated as Military Corporations). These Sanghas usually consisted of people tribally organised, who were well inured to the profession of arms. These organisations mainly pertained to regions, which are now known as the Punjab, the North-West Frontier, Upper Sind and Lower Afghanistan. The individual member of these Sanghas was known as Āyudhīya in Pānini's time. Kautilya also refers to Āyudhiyaprāyāh, i.e. Corporations of Soldiers, as opposed to Srēniprāyāh, or guilds of craftsmen and skilled artisans.*

Pānini has classified the Sanghas into four groups viz, (1) Vāhika, i.e., pertaining to the Punjab (Vahika), (2) Pārvata i.e., hill-dwellers, living in mountainous country in the north, (3) Pūgas, i.e., armed villagers organised under gramaniis, (4) Vratas, i.e., rudimentary Sanghas living mainly by depredation and violence. The Vāhika country produced the finest Sanghas, situated as it was between the Sindhu and the Satadru (Sutlej) rivers, the boundaries of the Āryan holy ground. These units are also mentioned in the Mahābharata with approbation (Karna Parva).** The Pārvata group lay mainly in the North-West and on the borders of Kashmir. Kātyāyana (5th Century B.C.) mentions the following tribes as falling in this group viz., the Hridgōhyas (Hidda in Jalalabad Dist. formerly called Negarahara); the Andaka Varityah (Andikhni in north-west Afghanistan); and the Rohitagiriyas (in Rohitagiri or Hindu Kush region). The Purānas mention some more tribal names in this area, e.g. the Hamsamārgas, (now called Hunzas). The Mahābhārata, describes these tribes by the general name of 'Giriguhavaras

* Kautilya also calls hired corporations of fighters, 'sreni'.

** The Kahudrakas and the Malavas belonged to this region.

(dwellers in mountains and caves); the Greek writers mention these war-like tribes as serving in the Persian army of Darius the Great; and it was these tribes that gave the hottest welcome to Alexander, when he ferociously intruded into the Indian soil. The Pugas, controlled by grāmanis, lay on the right, or western, bank of the Sindhu, in the region of modern Kandahar. The Vratas were found every where, but mostly outside the Vāhika country.

Even among the highly organised Sanghas, there were grades of evolution; some were aristocratic oligarchies, while some were democratic enough to associate all the adult population in the management of the Sangha, particularly, in the right of issuing coins. In-between were the Srēnis, which were Corporations of fighting Kshattriyas, which would exclude the Vaisyas, or the common people, from the organisation.

The Puga was much looser in make-up than the Sangha, and usually took its name from its grāmani or village chief; some were geographical in origin. Dēvadattaka, Yagñadattaka are typical Pūgas, named after the grāmanis.* The Mahābhārata states that Prince Nakula had to fight it out with grāmani-led Pugas on the west bank of the Indus. Pānini details some names found here: for instance, that of Asani (present Shinwarics); Apritas (now Afridis, Greek Aparytai); Pawindas (modern Powindas in the Gomal Valley); and Vanavyas, (now the Wana people to the north of Gomal Valley). The area inhabited by these Pūga-grāmani tribes was known collectively as Pākhtāya or the country of the Vedic Pākthas (the Paktyike of Herodotus), from which the modern name of Paktoon is derived.** (It is curious that these (Pūga) clans still adhere to their age old type of rule; there is a Council of Elders, presided over by a Mallik, who corresponds to the grāmani of the olden days). These Pūgas had attached to them juvenile organisations called Kumāra-Pūgas, which are mentioned as Kumārakas, in the Arthasāstra.

* Even to-day, the Pathan Khels are named after a remote ancestor; e.g., the Yusufozai).

** In a previous chapter, I have equated this area with the Egyptian 'Land of Punt' or Pakth, subsequently called the 'Ophir Land'. I may add that Pakthya = Paktoon = Pathan.

Lastly may be mentioned the Vratas, which were bands of warlike nomadic tribes, often in perpetual conflict with other units of the Aryan society, in Sapta Sindhu. There is a reference to such nomads in the Rig Veda as Vratasāhāh. Kātyāyana defines a Vrata as a Sangha living by violence, thus following the view taken by Pāṇini. It is clear that these were primitive Aryan communities, which had broken away from the Aryan fold and had refused to conform to the orthodox ways of life, and the worship of the Aryan divinities. It is remarkable that the habits and proclivities of these people have not changed, after the lapse of perhaps 30 or 40 centuries. Even to-day, the Afridis are easily prone to violence and depredation and the same view can be held of the Daradas (the Dharvabhisaras) who live beyond the Kashmir valley. Latterly, these Vrata Sanghas were known as Vrātyas, addicted to peculiar dresses and manners, which I have described elsewhere, in these writings. The Vrātas were less democratically organised than the Pugas, although their leaders were also called grāmanis. Their chiefs (now called Khans) were inclined to be despotic and this led to resistance and internal friction. Earnest attempts were made by the conformists to claim these Vrātyas back into Aryan society, by certain simple and elastic rituals, called Vrātya-stōmas, supposed to chasten and purify them. Those thus de-stigmatized were known as Brāhmana-Kritāh, Kshattriya-Kritāh, etc., according to the scale of society into which they were admitted, after redemption. Pāṇini indicates that in his time vigorous measures to spiritually rehabilitate the Vrātyas were in vogue, but the Vrātya soldiery continued to exist (as they do even to-day) with their own āchāryas and their own heterodox forms of worship. As among the Pugas, there were Yuvana Vrātyas i.e. juvenile members, addicted to minor forms of violence, and with incipient marauding instincts, not often checked by the elders.

It will be clear from the foregoing, that from times immemorial, there were certain areas in Sapta Sindhu, where Kshattriya clans were organised as Corporations of professional fighters, whose services could be hired by kings needing additional military help. The Purāṇas contain many stories where such help was sought for, and given. In historical times also, these sturdy little

military republics continued to play the same role, viz., of professional soldiery, always open for hire on a tribal basis, to fight any wars, irrespective of the politics or ethics of the contestants. Certain communities continued this tradition of war by fighting among themselves, in the quest for booty or territory. These conditions have not ceased to exist, in some measure, even to-day particularly in the No-Man's Land lying between the settled areas of north Punjab and the kingdom of Afghanistan i.e., the heart-land of the Paktoons, (or the ancient Pākṭiyas, who are mentioned in the Rig Veda anent the Battle of the Ten Kings).

It will be appropriate to end this note with some remarks identifying the tribal republics of the Punjab and North-West India, which were attacked by Alexander, and whose names are found in the Greek chronicles.

Sanskrit name of the tribe

As mentioned by the Greeks

- | | |
|----------------|--|
| (a) Kshūdrakas | These are mentioned as Oxydrakoi by the Greeks, and as Sūdracae by Curtius. |
| (b) Mālavas | named Malloi by the Greeks; these offered the stoutest opposition to Alexander, from their fortresses. Prof. Mazundar has interesting theories about this tribe. |
| (c) Vasati | identified with the Greek Ossadioi, settled in the region of the confluence of the Chenab and the Sultej. |
| (d) Aprita | Connected with the Aparytoi of the Greeks; the present Afridis, (who even now, call themselves Apridis, in Pushtu). |

<i>Sanskrit name of the tribe</i>	<i>As mentioned by the Greeks</i>
(e) Madhumant :	located in Gāndhara by Pānini and also mentioued in the Mahābhārata. They are the present Mohmands, living north of the Kabul river.
(f) Asvayana :	equivalent to Greek Aspasioi, located in the Kunnar Valley. The people are called hvaspa in the Avesta, meaning "good horsemen", i.e., su-asvāh in Sanskrit.
(g) Asvakāyana :	Greek Assakenoi in the Swat Valley, with their capital at Masakavati, in Pānini's time,
(h) Hastināyana :	named Astakenoi by the Greeks, and living near the Kabul river, with their capital at the famous Pushkalāvati (Chārsadda). These are described as the bravest fighters met by the Greeks, in the foreign texts.
(i) Vārteya :	called in Greek, Oreitai, who lived near the mouth of the Sindhu and who negotiated a peace with Alexander, without fighting.
(j) Arabhata :	mentioned as Arabitai by the Greeks, living near the river Araba (now Porali) a small river falling into the sea, near Karachi.
(k) Dhārteya :	Greek Dyrta, a town and people near the Asvakāyana territory.

*Sanskrit name of the tribe**As mentioned by the Greeks*

(1) Soubhrāya :

termed Sabarcae by Curtius and Sabagrae by Orosius, and described as a very powerful tribe who could put on the battle field 60000 foot-soldiers, 6000 horse and 500 chariots. They lived on the river Ravi.

General Note: In Vedic and post-Vedic times, men of all castes were embodied in the army. Brahmins frequently followed the military profession. The Epics mention several Brahmin warriors; the Jataka tales confirm this tradition. Alexander found the Brahmins to be his most redoubtable opponents and the City of the Brahmins resisted his attacks most valiantly. Alexander, as a consequence, grew to hate Brahmin warriors; in the words of a Greek historian, "he put them to death wholesale and hung up their bodies by the road side" to the unspeakable horror, we may well believe, of all the people of the land. P. C. Chakravarthi (P. 80) gives a long list of famous Brahmin Generals of India. One of them was Krishna Rama, the Commander-in-Chief of Raja Raja the Great, and Rajendra Chola. It must be conceded, however, that at least in the post-Vedic and succeeding periods, the bulk of the army consisted of the third and fourth Aryan castes. The Greek writers pay a high tribute to these foot soldiers. Hiuen Tsang has this to say of them: "They carry a long spear and a great shield; or they hold a sword or sabre and advance to the front with great impetuosity. All their weapons are sharp and pointed; they are spears, shields, bows, arrows, swords, battle axes, lances, halberds, javelins and various kinds of slings. These (weapons) they have used for ages." (Beal: Buddhist-Records I-73). P. C. Chakravarthi (P. 17) adds: "It must not be thought that infantry in ancient India was merely a 'residue'. As archers, they seem to have been redoubtable fighters and won the admiration of the Greeks. They excelled in special types of warfare especially in hilly terrain and forest lands." The Tamil 'heroic' poems are all praise for the local infantry.

NOTE II To CHAPTER IX

WAS GUN-POWDER KNOWN TO THE ANCIENT HINDUS?

Most western writers credit the discovery of gunpowder to the Chinese, from whom Marco Polo is said to have learnt the art of making the explosive, and to have carried it to Europe in the 13th century. As Carman ('History of Fire Arms') points out, this theory is now discredited, as gun powder was known to the Arabs, the Hindus and Eastern Greeks, long before Marco Polo's time. There are strong indications that the ancient inhabitants of Āryāvarta were aware of the use of explosive powders, even earlier than the Chinese and that the art, probably, travelled from India to China in the east, and to the Arab countries, in the west. I have quoted elsewhere the views of Prof. Wilson and Dr. Oppert on this subject; the following observations will go to reinforce the opinion expressed by these Western writers.

Henry Wilkinson in his book "Engines of War" (written in 1841), deals with the origin and the nature of gunpowder. Considering the discovery of gunpowder to be of unsurpassed significance to humanity, he holds that "it gave civilised nations a decided superiority over the barbarous ones". It is obvious, however, that long before true gunpowder was known, there were fire implements and fire-throwing engines in martial use. Vessels and pots containing inflammable mixtures, and arrows with burning fire-heads, were familiar weapons in the Epic wars in India, according to our great poets. The Rāmāyana mentions even 'mānosila' (antimony sulphide), a powerful explosive, now in requisition for warfare and for fireworks. Kautilya's Arthasāstra (4th century B. C., *) lists a number of recipes for making explosive and inflammable mixtures, as I shall detail presently.

* The Arthasastra of Kautilya (or Vishnu Gupta), is now generally conceded to be the genuine work of Chanakya, the Mauryan statesman and not the 'effort of a medieval pundit' as suggested by a German author. Among others F. V. Thomas, V. A. Smith, Jolly and L. D. Barnett accepted the authenticity of the treatise, which was itself a late summary of many earlier Arthasastras, as mentioned by Kautilya himself in his learned treatise: "This Arthasastra, or Science of Polity, has been made as a compendium of all those Arthasastras which, as a guidance to kings in acquiring and maintaining their realms, have been written by ancient writers", (Chapter I Book I). Kamandaka, writing in the II Century B.C., hails Kautilya as his great exemplar.

Oriental Greeks attributed the discovery of explosive powders to one Kallinus* of Heliopolis in Syria, who served under Emperor Constantine of Byzantium, in the 4th century A.D. His semi-liquid composition was known as sea-fire and could not be extinguished with water.† The Emperor kept the formula a dark secret, which was, however, revealed by his daughter, Princess Anna, (in her book called *Alexiad*). According to her, this 'sea fire' was compounded of powdered resinous gums, naphtha and sulphur. According to later writers (Francis Grose and H. W. L. Hime), the composition was bitumen, sulphur and naphtha, which were familiar to the Arabs, who exported them to the West. In the Crusades, both sides used this 'sea fire', which was also called 'Greek fire' by the Christians, on the supposed Greek origin of the invention. "The Saracens", in the words of Joinville, an ancient writer of the 13th century, "brought an engine called petrery in which they put this 'Greek-fire' in the slings. It came front-wise like a barrel of verjuice, (soup or sauce,) and the trail of fire issuing from it was as large as a long lance. *Its noise was like Heaven's thunder and it gave a light like that of the sun.*"‡ W. Y. Carman (*A History of Fire-Arms*, P-8,) adds, "The type of machine for throwing these barrels of fire could be of the principle of tension (large bows), torsion (twisted rope), or counterpoise (weighted swivelled arms)". He mentions that in the time of King Edward III of England, one John Ardenne proposed, "that apart from long bows and cross-bows throwing incendiary material, birds and animals could

* C/f. Kallinos (or Kalyana), the famous Sophist who met Alexander and later burnt himself, before the Greek ruler.

† In this respect, it resembled, a well-known diabolical weapon, first used by the Germans in World War I, viz., the 'flammenwerfer' or flame-thrower. The British and the Americans perfected this instrument of attack which has since been widely used, especially, in flushing out troops hidden in caves and trenches, and in overcoming bunkers and strong points. The famous Churchill Crocodile was a tank-cum-flame-thrower.

‡ The word petrery (stone thrower) comes from Sanskrit patra or stone. It is significant that the Saracens should have used such an engine which is nothing but a refinement of the 'Sarvathobadra' mentioned by both Panini and Kautilya, and defined (by the Commentator of the latter), as "a cart with wheels capable of rapid rotation for throwing stones in all directions".

carry the fiery composition in iron or brass containers. In a manuscript of Vienna, a cat and a flying bird are shown as pressed into this dangerous and uncomfortable service". It is highly interesting to find that Ardenne had been anticipated, by nearly 18 centuries, by Kautilya, (whom I have cited elsewhere in this chapter) who suggests that birds and animals could be made to carry inflammable powder (agniyoga) into an enemy's fortress, from the invading monarch's camp.

To throw some more light on this 'Greek fire': it is clear that the Arabs knew of it long before the Western Greeks. As Wilkinson says, (P-132 'Engines of War') it was considered by the ancients as an Arab invention and was known also as 'Medeas-fil'; it was known to the Chinese long before the Europeans knew of it, and was called "the oil of the cruel fire", by the Celestials. As already mentioned, the ingredients were naphtha, resinous gums, sulphur and perhaps, nitre. I suggest that the ancient Indians were the original discoverers of this 'sea-fire', for the following reasons. We have strong indications of the use of fire weapons and inflammable powders and oils in our ancient literature like the Great Epics, the Manu, and the Sukra, Nitis, and the Arthasāstras, all of which ante-date the theories of the Arabs and the Asiatic Greeks by a long interval. The famous sloka in Manu, (Ch. VII 90) asking Kshattriya warriors not to make war on adversaries resorting to poison, fire-weapons etc., had been interpreted by Halhed ("Laws of the Gentoo's"), as referring to the use of poisoned arrows and of inflammable missiles, though subsequent Western writers have disagreed with this interpretation*. Resins and incense (along

* Hopkins for instance, was fully persuaded that Halhed had misconstrued Manu and that the ancient Aryans had no knowledge of any fire weapons. It need scarcely be emphasised that Hopkins was consistently chary of crediting the early Hindus with scientific refinements in war. For instance: he seriously maintained that prior to the date of Alexander, Indians had no knowledge of stone architecture and of masonry fortifications. Recent excavations at Rajgriha, Kausambi etc. have completely refuted Hopkins. In Orissa and in Bihar, city-fortifications in stone masonry running into tens of square miles, and going back to the 7th and 8th centuries B.C., have been uncovered. As

(Continued on page 370)

with sulphur and / or nitre) were the basis for all incandescent projectiles; and India was the home, *par excellence*, of resins and incense powders. We have seen elsewhere in this book, that the Egyptians imported these commodities from Sapta Sindhu and King Solomon had sent ships to the west coast of India (the Land of Ophir) for these very articles. Bdellium, (guggulu in Sanskrit) is a highly inflammable tree-gum and commanded an extensive market in the ancient world, not only for use as incense, but for spectacular pyro-technic demonstrations. Guggulu when reinforced with turpentine and lac (Sanskrit: laksham), would not be easily extinguishable by application of water. The Mahābhārata, as I had mentioned elsewhere, refers to the use of resins, waxes and combustible materials, in the Great War. Kautilya gives more specific details of the use of explosives while dealing with assaults on forts*, (which could also be taken by sapping and mining and by "the use of machines"). He gives several recipes for making inflammable powder; in these formulae, guggulu, lac and turpentine figure prominently, vide the extracts which I have given elsewhere in this chapter. It is common knowledge that many sciences and arts travelled from India to Europe through the Arabs and the Asiatic Greeks.† To quote only a few, Mathematics, Geometry, Astronomy,

(Continued from page 369)

has been pointed out elsewhere, the excavations at Kausambi take this type of masonry culture back to 1000 B.C. and more. The Rig Veda knew of stone-fortresses. "We find indeed mention of Pura, which were occasionally of considerable size and were some times made of stone (asmanayi) or of iron (ayasi). Some were furnished with a hundred walls (satabhujī). These Pura were probably rather ramparts or forts, than cities" ("An Advanced History of India", P. 34, by Mazumdar, Roy Choudhri and Datta). Panini and the Mahabharata, frequently refer to cities, in post-Vedic times. The Epic mentions the following as indispensable for city defences: durga, gulma, nagara, pura, bala-mukhyas, sasyabhihara, samkrama, prakanthi, akasa-janani, kadanga-dwaraka, dvaras, sataghni, bhanda-gara, dhanya-gara, asva-gara, gaja-gara and baladhi-karana (Santiparva 69-1-71).

* Chapter IV, Book; XIII, Arthasastra.

† The name 'Greek-fire' given to the incendiary weapon mentioned earlier, originated only in the sixth century A.D. Neither the Arabs nor the Greeks used this description themselves.

Medicine, Alchemy and Magic (not to mention various Transcendental Philosophies), flowed west from Sapta Sindhu to Persia and to Arabia, and thence to Europe. In the same way, the knowledge of fire-weapons probably progressed from India to the Mediterranean region.

To turn to the technique of making real explosives like gun powder : it has been often contended by Western writers, that the Indians of old did not know the use of the two main ingredients of explosive powder, viz., sulphur and saltpetre. This allegation is somewhat strange since the Sanskrit vocabulary has had, from the earliest times, expressions descriptive of both these chemicals. Sulphur was known as "gandha" and saltpetre (or nitre) as yavaja and yavakshara† and both these are mentioned by Pānini and Kautilya. Further, petroleum and naptha, (other ingredients used in gun-powder), have been known in South Asia from even pre-historic times.* Flaming naptha was used heavily in Arab warfare of the Prophet's time; (in one of the wars, the Kaaba is said to have been burnt down by naptha, supplied by Syrians).** There is reference to the substance in the Bible and in the Egyptian hieroglyphs. Bitumen and naptha were well known to Kautilya; (Vide Book II, Chapter XII of the Artha-sāstra).

In this context, the observations of H. Wilkinson are of great import. Suggesting that the "origin of gun-powder could be traced to the practice in China and India of cooking fire with wood-fires, on a soil strongly impregnated with nitre", he adds, "the very obscurity of the origin of gun-powder is evidence of its

† Other Sanskrit names : Pakyah : Yavagrajah.

* The Greeks came to know of this rock oil from the Persians only after Alexander's invasion, says W.Y. Carman (A History of Fire-Arms' P. 11/12). "Petroleum was known in ancient times and its name shows its origin - rock oil. Naptha is another ancient term, having reference to the earth origin of the oil. Balls of naptha were used in India, and thrown by catapults." In medieval India, polo was played at night with balls of naptha set alight.

** Citizen Langles announced before the French National Institute (in the 18th century), that the Arabs knew of gun powder in the 7th century and used it in the siege of Mecca.

antiquity" (Engines of War, P. 132). It will be worthwhile to ascertain what actually the composition of this elementary explosive was. Marcus Graecus (8th century A. D.) in his 'Liber Ignium' gives the formula as 6 lbs. of saltpetre, 2 lbs. of charcoal and 1 lb. of sulphur. Earlier writers are not so precise; for example, Virgil mentions a contrivance "which imitates thunder." * Says Wilkinson: "The Brahmins had a similar thing according to Themistius and also the Indians generally, whose practice is recorded by Philostratus of 300 A. D. The latter, referring to the Oxydrachae** says, 'These truly wise tribes lived between the Hyphasis and the Ganges; their country Alexander never visited, deterred not by the fear of its inhabitants, but from religious motives; their holy men overthrow their enemies with fiery tempests and thunderbolts, shot from the city walls'. In Wilkinson's words, "This is the most striking illustration of the antiquity of gun-powder with which I am acquainted. It is also known that iron rockets have been used in India as military weapons from times out of mind." I may also cite here the opinion of Sir George Staunton, who observed about a hundred years ago, that "gunpowder in India and China was coeval with the most distant historical events and it will no doubt strike the reader with wonder to find a prohibition of fire-arms in records of unfathomable antiquity.† Alexander did undoubtedly meet with some such weapon in India, as a passage in Quintus Curtius seems to indicate."

In the words of Halhed (who has been much criticised by later writers), "Cannon‡ in Sanskrit idiom is called Satāgni (or a hundred fires) and the Purāna sāstras ascribed this invention to Bhisvakarma". According to Wilkinson, the use of the Satāgni

* This must obviously be the 'big bang', or the saluting gun, used to produce thunderous sounds on important occasions like Royal or Temple processions, marriages, etc., in ancient India.

** The Kshudrakas of Panini.

† i.e. in the Code of Manu, already cited.

‡ Westerners derive the word cannon from canna=reed. The canna or reed, (probably the bamboo of India) was originally in use for throwing the 'Greek fire', which was the precursor of artillery.

(which may be the incipient cannon), fell later into disuse both because of moral injunctions and because of the awkwardness and imperfection of this kind of artillery itself. "There was an aversion to use newly invented arms as contrary to humanity and opposed to bravery," says Wilkinson.

The ingredients commonly used in gun-powder in recent times, are nitre, charcoal and sulphur in the ratio of 50 : 25 : 25;* "and this formula appears to be very ancient", says Wilkinson, who adds that although sulphur was very desirable as an ingredient, it was not indispensable. "Sulphur was not an essential article even in good gun-powder, especially in large charges. Mr. Napier found that powder made from nitre and charcoal only, projected a thirteen inch shell as far as the best powder composed in the usual manner could". The strongest powder consisted of 16 parts nitre and 4 of charcoal. As W. Y. Carman points out,** the use of sulphur gives rise to heavy smoke which could be avoided by eliminating sulphur and using only salt-petre and charcoal, as was done by the French, till the 18th century.

We have seen that gandha or sulphur was known to the Hindus of old, but unfortunately, there is no specific literary mention of its use in the making of explosives in ancient times. (That powerful explosive, mānōsila‡ or sulphide of antimony was however well known even in the purānic age, as the Epics bear out). The case was otherwise with nitre or salt-petre, which was often found in a natural state in India, as admitted even by Carman. In historical times, Europe obtained its nitre from India and China by surface mining, and the various East India Companies carried on a flourishing trade in this commodity. §

* In the British Army the best gun-powder was made of 25 parts petre, 15 parts sulphur, and 10 parts charcoal.

** History of Fire-Arms, Page, 162.

‡ Curiously manosila was used in ancient India as a beauty aid, (collyrium). Sulphur is however, mentioned in the Sukra-Niti.

§ The nitre, imported from India by the English East India Coy, was known as the "Company's petre" and commanded a good premium in the English market. Sulphur was usually got from Indonesia and Sicily. The East India Coy. made huge profits from the export of salt petre, especially after the death of Aurangzeb, who had placed a ban on its export.

Subsequently, the Europeans learnt the art of making saltpetre from artificial beds, in which vegetable and animal refuse was collected and allowed to ferment, and thus form crude nitre. This process is very significant to students investigating the art of warfare in ancient India, as explained below:

Kautilya, who professedly summarised and transmitted for posterity the injunctions contained in the many Arthasāstras written by ancient writers, terms all explosives as 'agnisamyogas' and he enumerates various ingredients,* constituting these explosives. Briefly, their list would be as follows:

1. Charcoal i.e., powder of the pine (sarala) and deodar (dēvadāru);
2. Putrid vegetable matter (putitrna, i.e., stinking grass);
3. Bdellium (guggulu);
4. Turpentine (srīvēshtaka);
5. Lac (laksha);
6. The fermenting dung of non-carnivores, like the ass, the camel, sheep, and goats;
7. Wax (maduchchishta);
8. "The powder of all metals (sarvalōha) red as fire" (probably, aluminium oxide, antimony sulphide etc.);
9. Powder of lead (sīla) and trapu (zinc)
10. Bitumen (sīla jathu or giripushpakam);
11. Fatty vegetable oils or tallow.

It will be seen from the above list that practically all the ingredients necessary for making an explosive charge, are found in the Arthasāstra except that sulphur, as such, is not explicitly

mentioned.* Even assuming that sulphur was not in vogue as a constituent of gunpowder in Kautilya's time or earlier, it is evident that it was within the competence of contemporary scientists to make an efficient explosive mixture, using the other serviceable ingredient, namely nitre. We have seen that nitre or salt petre was found widely in India in its natural state and on the surface. Even if the natural product be not available, nitre could be synthesised from the raw products indicated by Kautilya, viz., decaying vegetable and animal refuse. As Wilkinson has pointed out, these were the source from which artificial salt petre was extracted, by fermentation in beds, in countries like England, and France, (where the natural product was scarce.)

To sum up, there is a strong indication that the flame throwing contrivance, known in ancient times as 'sea-fire' or 'Greek-fire, was none else than the Sarvathobhadra, mentioned in our ancient writings. There is also almost conclusive evidence that the Indians of old were acquainted with many varieties of explosives used in warfare, and that some of these contained ingredients, practically identical with those used in making gunpowder in early historical and medieval times. It is only in the late 19th Century, that the discovery of 'high explosives', or propellents using nitric acid and sulphuric acid, like gun-cotton, nitro-cellulose etc., changed the type of explosive charges used in war and in the blasting industry. [Alfred Noble was a 19th Century product !]

* It is extremely significant that in the 17th century A.D., the Prince Bishop of Munster invented an incendiary shell (known as a carcasse), containing practically the same ingredients as mentioned by Kautilya. To quote Carman, (P. 170 Ibid).

"Carcasses have thick iron shells and are frequently made oblong with several holes, to allow the inflammable composition to come out. This mixture consisted of salt-petre, sulphur, resin, turpentine, sulphide of antimony and tallow. It burnt with extreme violence, for three to twelve minutes, even under water." It may be added that the Suka-Niti mentions sulphur, as used in the *brihan-nalika* (a cannon ?)

CHAPTER X

SOME ARYAN CONTRIBUTIONS TO SCIENCE AND ART

In the preceding chapters, I have emphasised the plea that the Aryans were almost certainly autochthonous to Sapta Sindhu and that their culture had flowered into glorious form at the dawn of their history, as reflected in the oldest living literature of the world, viz., the Rig Veda, whose composition can be reasonably attributed to circa 5000 B.C.. It is difficult to delineate the state of Aryan culture prior to the composition of the Veda, because reliable indications are totally lacking. It is true that the Rig Veda harks back to an older state of existence (vide I(1)), in which there were poets and seers, devoting themselves to the service of the very gods, who were subsequently hymned in the Veda. But in the absence of reliable archaeological data, it is not possible to depict the culture of the infant nation in the immediate pre-Vedic era; and this hiatus is, in some measure, due to the wide-spread theory of a fancied invasion from abroad, which has prevented concentrated efforts being made to unearth evidences of Aryan culture prior to 2500 B.C. Perhaps, such antiquarian research is somewhat superfluous, as we are not quite concerned with the state of the Aryan nation, just as it emerged from the utter darkness of pre-literature, to the early light of their Vedic poetry and tribal lore. By the time the Vedic rishis were giving utterance to their inspired songs of adoration and supplication, the Aryans had reached an advanced state of development, mental and material, thus making their intelligent self-realisation possible, after over-coming the various obstacles standing in the way of their progress. It cannot be gainsaid that this advancement must have taken thousands of years to reach, and that the Aryans must have passed through the various rudimentary cultures (like the Palcolithic, Neolithic etc.) through which other primitive races had passed, elsewhere. The Aryan people must have lived in near-savagery long ago, subsisting on roots and fruits and the raw flesh of birds and animals, like other

aborigines of history. Their primitive weapons (of tree branches, bones and chipped stone) must have been in use for a long time till they climbed from the 'flaking' to the 'core-cutting' stage of stone weaponry, when crude arms like knives and axes would have been made out of rough stone, rudely shaped and polished. Gradually, they must have learnt to catch and tame wild goats and sheep, and later on, perhaps after a lapse of centuries, the cow, the horse and the camel. This animal entourage, naturally, retarded free and frequent movement; and the need for pasturage and a settled habitation, either in caves or rude huts, arose. Many thousands of years must have passed before the Aryan lived up to his name and started agriculture, even on a most modest scale, sowing wild grain on prepared soil.* Gradually, food cultivation took on its refinements; ploughing and allied operations became systematised with reference to the seasons; and the demand for domestic implements, which were originally of stone, and were later on fashioned out of hard wood, became overwhelming. Nomadic habits gave place to more stationary ways of life; settled villages grew up, in which crude residences designed for utility and comfort, gradually evolved. Agriculture was, however, always an operation notoriously subject to Nature's vagaries. These sometimes assumed such proportions that they were considered to be visitations of mysterious and malignant forces, ever prone to tease and humiliate human beings. The result was a gradual belief in the supernatural and the divine; Gods became individualised, with special attributes and functions. As a consequence, priesthood became a recognised vocation, since the Gods had to be ministered to, and addressed with prayers and set rituals and sacrifices. The priests developed, in due course, into 'seers', who claimed extra-sensory gifts, especially those of divination and of personal converse with the deities. Hymns and litanies thus became necessities of life to an intensely agricultural people, living at the mercy of the elements. These prayers had to be reinforced with penances and sacrifices, as a quid pro quo for divine favour. The material object of wealth, the pasu (originally cattle, but later on substituted by the goat) became the legal tender for discharging the

* Usually clearings in forests, created by 'burning over'.

Vedic Aryan's debt to his gods, prospectively and retrospectively. In this process, Agni was constituted the messenger of heaven; and as it was through fire that offerings to the gods were conveyed, Agni himself became a considerable deity to whom many passionate hymns were dedicated. In course of time, the rituals became more and more complicated, thus throwing a heavy onus on the priesthood, and in a way building up their social status and power. The Sōma plant, (indigenous to Sapta Sindhu)* became a familiar article of the sacrificial rites, on the theory that, what was welcome to the votaries of the anthropomorphic gods, was equally so to the divinities themselves. The latter were marshalled in impressive arrays under the leaderships of the Supremo of the Heavens, Indra, the Lord of Rain and Storms, Thunder and of Martial Prowess, ever engaged in overcoming various malignant powers like Vritra, Ahi, Jarāh and Sambara, who were bent on doing mischief to the Aryan community through droughts and floods, poor crops and pestilence.

I have referred, elsewhere, to a somewhat controversial remark of Sir Leonard Woolley about the Indo-Aryans, in which he has stigmatised them as semi-barbarous, and as the agents of the destruction of the great Indus-Valley civilisation. On the other side, may be quoted the opinion of a well-known Indologist, viz. E. B. Havell ("Aryan Rule in India") who says :—

"The theory that the Aryans, when first known to history, were semi-barbarous tribes, who borrowed their civilization from the more cultured races whom they conquered, both in India and in Europe, seems to be formed on a wrong judgment of the archaeological evidence. The Vedas, the bedrock of Indo-Aryan civilisation, are not the literature of an un-cultured people. They represent the culture of a race of warrior-poets and philosophers, who despised the arts of commerce".

* Whose juice was as cheering and invigorating as, for example, specially brewed Turkish coffee. It could not have been strongly intoxicant as it was often mixed with milk, rice or barley, and its use was strictly regulated by rituals. Besides, an intoxicant would have seriously impeded the elaborate sacrificial rituals calling for intense concentration, accurate recitation etc., on the part of the priests.

The Aryans lived mostly by agriculture in the Vedic age, supplemented by numerous village handi-crafts, marked by skill and artistic excellence. As I have mentioned elsewhere, the people were addicted to a vigorous way of life and they lived, so to say, with one hand on the bow, and the other on the plough. The primitive people with whom they came into contact in the forests and the hills, in the deserts and the sea coast, had little to contribute in return for the benefits of Aryanisation which they received, as the young race over-spread the Indian sub continent. Even when they pioneered their way into new lands in the Near East, Egypt and Europe, the traffic in civilisation was mainly of the export variety. To the local cultures in those lands (e.g., Egyptian and Semitic), they added from their own stock, and re-inspired with their own genius, the essentially mercantile and material civilisations in those regions and put a fine gloss of spiritualism, (albeit, of the Nature-worshipping type) over them. They introduced, wherever they went, higher values of human life and a profound belief in a life after death, conditioned by one's own wrong and right doing in this existence.* Even the classification of society into four grades (the spiritual, the fighter, trader-cum-agriculturist and the worker), was not something evolved purely out of urges specific to Aryāvarta; the classification is a general one applicable to most primitive people all over the world, moving forward into higher planes of civilisation. As E. B. Havell observes, it was the noblest characteristic of Indo-Aryan polity that it was always based on a just appreciation of the respective social values of these four human categories, in the shaping of the destiny of mankind. More than this, caste was no bar to the fulfilment of individual genius, wherever it may be found. The Veda is full of rishis who were Rājanyas and even Asuras. There are many instances where the low-born had been raised to the highest plane by sheer intellect and positive virtue. To give only two instances, Arundathi, the wife of Vasishtha, who has been worshipped by

* This belief bred, in due course, the doctrine of Ahimsa (or non-injury to living beings) and the abstinence from all flesh-eating. India reached early the apogee of ahimsa in certain Jain sects, whose tenets required that the mouth should be covered with cloth and the street swept before walking, to prevent harm to insect life!

the Hindus throughout the ages, as the model and the embodiment of all womanly virtue, was the daughter of an Asura; Vyāsa's mother, as is well-known, was an humble fisher-woman, who was wedded to Parāśara in an unusual circumstance.* To quote Havell again; "Though undue preference might be given to (Aryan) intellect, racial and social prejudices were never so strong (in the Vedic age). that the great thinkers of alien stock did not receive due honour".**

In dealing with the subject of this Chapter it will be useful if I begin by detailing all the professions mentioned in the Vedic literature, down to the Brāhmanas, particularly those which refer to arts, crafts and the sciences. In this manner, it will be possible to obtain a general idea of the state of civilisation of the early Aryan communities, with special reference to their achievements in the fields of science and art.

* The social divisions mentioned in our ancient literature had their counterparts in other so-called Indo-European communities. Students of classical literature may be familiar with Plato's famous declamation to the Athenians (in his 'Republic'): "Citizens, you are brothers but God has framed you differently. Some of you have the power of command; and these He has made of gold; others of silver, to be auxiliaries; others again, who are to be husband-men, and craftsmen, He has made of brass and iron." Plato however made it clear, as Manu did many hundreds of years earlier, that this 'metallic' talent was not essentially hereditary. "A golden parent will, sometimes, have a silver son and vice-versa." The intelligent reader will note that Plato has omitted to categorise manual workers and servitors. This is because these were not citizens *but slaves*. Three-fifths of the population of Attica consisted of bond-men and women. The Greeks had no need for a fourth caste! Things were quite different in India with the sudras, who were universally deemed to be as much Aryan as those of the three higher castes. Megasthenes says of them: "The law ordains that none among them under any circumstances be a slave; enjoying freedom, they shall expect the equal right to it which others possess." He adds further, "All Indians are free and not one of them is a slave. The Indians do not even use aliens as slaves; much less a countryman of their own."

** Later Indian history is full of instances where the very low-born had been canonised with eclat. Many Vaishnavite evangelists were sudras, and even panchamas. The famous Saivaite saint, Nandanar of South India, belonged to the humblest order of society.

The Vedic literature, broadly speaking, mentions the following professions: aritr, a rower; a drum-beater; ugra, a police official; a mill-grinder; a plough-man; a potter; kusidin, a money lender; kaivarta, a fisherman; ganaka, an accountant; gōpaka, a herdsman; grāmaṇi, a city or village chief; grāmyavādin, a village judge; chāndoga, a song-reciter; jīvagr̥bh, a police man; jyakara, a bow maker; talava, a musician; savaya, a fire guard or ranger; sarathi, a charioteer; nakshatra-darsa, an astrologer; nabita, a barber; nāvaja, boatman; parivēstri, a waiter; paris-kanda, a footman; palagala, a postman or messenger; pēsaka, a female embroiderer; pesitri, a wood-carver; sthapatih, an architect or sculptor; bidalakāri, a basket-maker; bhāghadūha, a retailer or distributor; manikāra, a jeweller; yantri, a chariot maker; yoktri, a tier of yokes; rājayitri, a dyer; rajjuka, a rope maker; rathagritsa, a superior chariot-maker; vanij, a merchant; vapa, a sower; vāyitri, a weaver; vināgāthan, a lute player; samitri, a cook; sastri, a butcher; srōtriya, a learned theologian; sabhā chara, a judicial assessor; sabhāvin, a keeper of a gambling hall; siri, a fine-cloth-maker, or tailor; surākāra, a wine maker; hiran-yaka, a goldsmith. The Rig Veda, in particular, mentions the following: vāpta, barber; tasta or twashta, carpenter; bishak, a physician; karmāra, iron-smith; and charmana, a tanner. The Atharvan refers to rathakāras and sūtas (chariot-makers), kulāla (potter), the dhanushkāra (makers of bows and arrows), the royal hunters, including the swāni, (keeper of the hounds). In the Taittiriya Brāhmaṇa, a fuller list is given, apropos of the Purushamēdha or the symbolical human sacrifice. The list contains, *inter alia*, māgadha (bard), sailusa (actor), surākāra (vintner), āyastapa (steel-maker), bidalakāra (basket maker) vanij (trader), the boat-maker, the harlot, the various members of the fighting forces, and sundry representatives of beauracratie authority*. Judging from the long list of professions referred to in the ancient texts one can easily gauge the high standard of culture attained by the Aryan people, by about 2500 B.C., at the latest.

* It has been admitted, even by western writers, that the mention of the courtesan in the Brahmana, is firm evidence of great social advancement. According to Sociologists, the existence of this ancient profession is the hall mark of a cultivated society, in the same way as that of a money-lender.

It does not seem necessary to draw support here from the so-called Indus-Valley civilisation, for my contention that the Aryans, when they emerge into literary history, were far from being uncivilised, since this can be proved even otherwise. The Vedic Aryans were clearly accustomed to city life, and possessed all the attributes arising from this circumstance. The building and allied arts had always been associated with the science of warfare. We have seen, in an earlier Chapter, the advancement in military technique the Vedic Aryans had reached to; they used the horse, the elephant, the chariot and the infantry; they possessed a serviceable armoury of weapons, made of copper initially, and later, of the 'black metal', or iron. They had learnt how to make steel and even possessed some knowledge of inflammable powders and projectiles for throwing fire balls and solid missiles*. The creation of explosive sounds (or big bangs) on the occasion of Royal or Temple processions is a very ancient custom. Rocket-like projectiles, named petards, were also probably known to ancient Aryans. The word petard is derived from Sanskrit 'pardh' and Latin 'pardhare', i.e., to break wind. Looking to the nature of the weapon, this Indian derivation is very significant. That the use of explosive powder and of rocket missiles had later progressed very far in India, out of indigenous skill, will be seen from the following extract from the book, 'Guided Missiles', by Frank Ross.

"These reaction-powered devices probably made their way from the Orient into Europe via Arabia, where detailed knowledge concerning the mixing of powder as well as the construction of the weapon itself was known as early as the fourteenth century. Following their introduction and widespread use in Europe about 1400 A.D., they remained, for a little more than one hundred and fifty years, as major weapons in the arsenals of warring nations.

* A. L. Basham makes the following remarks about the skill of the ancient Hindus in chemical warfare. "In fact the Indians possessed the ancient world's equipment of artillery: ballistas (not known before Mauryan times), battering rams and siege engines. The inspiration for the wonderful weapons of the poets may have come from the incendiary missiles, fire-balls and the like, which were a special feature of Indian military equipment, though disapproved as unfair by the Smrithi writers."

Subsequently, they fell into temporary oblivion largely because of a tendency to be inaccurate when fired and the fact that the rifle and cannon were being steadily improved, as competing fighting tools.

"Meanwhile, in another portion of the world, India, military technicians were not only familiar with the basic knowledge of rockets,* but they had even improved them as war weapons, over those employed by their European brethren. The British soldiers were to make this painful discovery during the later 1700's, when they attempted to defeat the armed forces of Hyder Ali, of Mysore. Among the troops of this Indian monarch was a specially trained corps of rocket bombardiers, who fired their flaming projectiles at the charging ranks of horsemen. Surprised and confused by these missiles, the British suffered a considerable number of casualties.

"These Indian rocket-missiles were made of iron cylinders about eight inches long and almost two inches in diameter. Bamboo shafts, approximately ten feet in length, were fastened to the rockets to keep them flying in a reasonably straight path.

"When news of these Indian rockets seeped back into Europe, there was a general revival of interest and activity in this war weapon. Appropriately enough, this interest was no where greater than in England, where the rocket was about to experience another advance in its historical progress".**

* In fire arms, the sudden expansion of explosive gases inside a barrel forces the shot forward at a tremendous but rapidly diminishing speed. In a rocket, the propellant goes with the missile and the gases, discharging backward, actually increase the speed.

* The man who propagated rockets in the English Army was Sir William Congreve, who exhibited at Woolwich, the rockets used with such deadly effect by Tippu Sultan at the siege of Srirangapatnam. In the Napoleonic wars, a rocket corps was established in England, by Congreve. To quote H. Wilkinson: "Many foreigners affected to treat them with contempt and pretended that the rockets owed their efficiency more to the moral effect produced on an enemy than their own destructive powers. This is a very erroneous opinion, as the rockets possess many advantages over the cannon, howitzers and mortars, and are applicable to new and important purposes. In new wars, rockets will assume new and powerful features and they will not be more expensive than

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Vedic Aryans built "iron forts and thousand pillared halls", if we may believe the Rîg Veda. They knew the ocean, and the art of navigation, and could man ships with a hundred oars. They wore fine clothing of silk, wool, linen and cotton in peace time; in war, they donned armour of various shapes and makes, including complete chain-mail for the body. They had domesticated several useful animals and taken to intensive cultivation, with the aid of irrigation. They bred a race of singers and poets, who "burst forth into glorious song", in the worship of their national divinities. Much beautiful poetry was written in the process, in many a majestic metre and in sonorous language replete with fine imagery. Their philosophy (which reached its sublime heights in the Upanishads) was already taking its hazy shape in the Riks. Meanwhile, the Aryans continued to cultivate the arts and sciences, in such a manner as to conduce, in no small measure, to the progress of the human race.

The legacy left by the Vedic Aryans was put to good use by their successors in the epic and the historical ages. In literature, there was phenomenal advancement; and in the great Epics and the Kāvyaś and in the brilliant dramatic works of the classical writers, the world saw some of the finest efforts ever achieved by human skill and erudition. In philosophy and religion, the gifted seers reached new heights of brilliant speculation and inexorable logic, in the Upanishads, which have won such admiration from discerning critics all over the world. In the arts and the sciences also, the progress was on parallel lines and it will be the purpose of this chapter to show some of the contributions made by the early Aryan society (right down to medieval times), in this field of human progress, particularly, as regards mathematics and medicine, in which sciences Āryāvarta, undoubtedly, led the world for a long time, as it did in the techniques of war-fare.

(*Continued from page 383*)

the usual apparatuses of war" (Ibid P. 120). The prediction of Wilkinson has proved to be remarkably accurate, as recent experience in warfare amply bears out. (c/f the bazooka, the Z-gun, the flying bomb, and the various missiles, guided and ballistic). As Carman says, (History of Fire Arms, P. 197), "The humble toy of amusement has developed into the means of a way to the stars."

Hindus and Mathematics

The ancient Aryans were nothing if not mathematically minded. This trait of theirs has been admirably summed-up by Mahāvīra (A D. 850), who observes thus :—

“In all transactions which relate to wordly, Vedic or other similar religious affairs, calculation is of use. In the science of love, in the science of wealth, in music and in drama, in the art of cooking, in medicine, in architecture, in prosody, in poetics and poetry, in logic and grammar and such other things, and in relation to all that constitutes the peculiar value of the arts, the science of calculation (*ganita*), is held in high esteem. In relation to the movements of the sun and other heavenly bodies; in connection with eclipses and conjunctions of planets and in connection with the *tri-prasna*, (direction, position and time) and the courses of the moon; indeed in all these, it is utilised”.

In a Hindu's life, arithmetic came early. The child, between the ages of 5 to 8, had to learn the *lipi* (alphabet), *rupa* (drawing and geometry), and *ganita* (arithmetic), according to ancient injunction and established practice. Kautilya mentions *ganita* as *sankhyāna*, which the prince had to learn at the age of six. It is said that the Sākyamuni learnt writing and arithmetic at the age of 8, at the royal seat of Kapilavāstu*.

The term *ganita* (calculation), occurs in the *Vedānga Jyotisha* of circa 1200 B.C., where its position among the sciences is compared to the crest of the peacock, and the gem in the hood of the serpent. Subsequently, the science was separated from astronomy and split up into various specialities like *kshētraganita* (geometry), *parikarma* (fundamental operations),

* The lists of early Aryan learning make impressive reading. Apart from the four *Upavedas* (*Ayurveda*-medicine; *Dhanurveda*-military science; *Gandharvaveda*-music; and *Sthapatyaveda*-mechanics and architecture), the adept had to study the ‘Six Limbs’ of the Vedas, viz., *Siksha*-phonetics; *Kalpa*-ritual; *Vyakarana*-grammar; *Nirukta*-etymology; *Ghandas*-metrics and *Jyotisha*-astronomy. Among the minor courses or disciplines, the *Upanishads* mention, *inter-alia*, *rasi*-mathematics; *nidhi*-chronology; *vako-vakya*-dialectics; *ekayana*-ethics; *bhuta-vidya*-science of the elements; *nakshatra-vidya*-astronomy and *devajana-vidya*-dancing and music. The *Sastras* and *Puranas* cite 64 *Kalas* or accomplishments as the hall-marks of finished education, (vide Note II to this chapter).

vyavahāra (determinations), rasi (rule of three), kalasavarna (fractions), yāvat-tāvat (proportions or simple equations), vargā (square or quadratic equations), ghana (cubic equations), varga-varga (bi-quadratic equations), bijaganita (algebra), and vikalpa (permutations and combinations). All rough mathematical work was carried out in ancient times, (when head and hand would not suffice) on wooden boards (pati-ganita), or on sand spread on the ground (dhuli-ganita). Unfortunately, many ancient works on this science have been lost. Progressing from the time of the Vedānga Jyothisha (when Brāhmi numerals got fixed), Hindu Mathematics reached its present form in the ages of Pānini and Kautilya, (8th to the 4th Century B.C.). By about the 7th Century A.D., Mathematics in India had become systematised into the various branches mentioned above, the principal exponents of the new system being Arya-Bhata I* (450 A. D.) Bhāskara I, Brahmagupta (628 A. D.), Sridarāchārya (700 A.D.), Arya-Bhata II and Bhāskara II, (1150 A. D.).

In India, numeral notation has always been based on 'ten', and no other notation is traceable in Sanskrit literature. While the Greeks and the Romans, (who ultimately borrowed their mathematical ideas from Sapta Sindhu), never advanced beyond the myriad (10^8) and the mille (10^4) respectively, the Hindus went up to at-least (10^{18}) i.e. 18 denominations, and the numeral language showed perfect explicitness. The Yajur Veda mentions numbers upto one million millions (called parārdha) and these are repeated in other samhitās. In the 5th Century B.C., as per the Buddhist Lalitavistara, the Bodhisattva enumerated numbers, in decuple fashion, up to 'pakoti' which is 10 million kotis. ‡ The Jaina canonical works also deal with numbers, and in the Annyoghadvāra (100 B.C.), the then population of the world was estimated at beyond the 24th place and within the 32nd, (or roughly 2^{32}).

* Aryabhata was, *inter-alia*, the author of Arya Ashta-sata (800 couplets) and of Dasa-gitika (10 poems). He was known to the Arabs as Arbāhar or Arjabāhar. His writings were called by them 'Sind Hind', which Colebrooke reads as 'Hindu Siddhanta,' following Al Beruni, who says, "Our word Sind-Hind answers to what the Hindus call Siddhand, i.e., what is straight and cannot be bent or altered."

‡ a koti=10 millions — See Note at the end of the chapter.

Soon, thereafter, the notion of place-values developed and Aryabha'a (5th century A. D.) mentions numbers by 'places' and ultimately 84 notational places were specified. Bhāskara II (1150 A.D.) mentions, with satisfaction, this remarkable evolution of place-names achieved by 'ancient writers', as most conducive to correct mathematics.

The names from one to ten had already been evolved in the Rig Veda; Sanskrit, setting an example to most languages of the world, introduced the system under which, in all numbers over two digits, the bigger elements precede the smaller ones: e.g., in a four digit number, the language will mention thousands, then hundreds, then tens, then units and so on. Since written Sanskrit, before the times of Pānini, was mostly poetical, various devices, like the subtractive, were used to describe numbers, besides the additive and the multiplicative; (e.g., the number 22 was described variously as "two added to twenty", or "twice ten plus two", or "twenty four less two", in poetical diction).

It is commonly recognised that numerical symbols were developed from written characters (whatever they were) and in the early stages, numbers were probably spelt out in full. While we have considered the art of writing in India separately, it will suffice if I mention here that, as seen from the Indus-Valley seals, numbers upto ten were originally represented by strokes, thin and thick* for small and large digits. Probably, written characters were used for larger numbers, as done by the Greeks and the Romans later. As Messrs. Datta and Singh observe: ('History of Hindu Mathematics'):

"The reference to the writing of the number eight in the Rig Veda and the use of numerical denominations as big as 10^{10} in the Yajurveda Samhitā and in several other Vedic works, offer sufficient grounds for concluding that even at that remote period, the Hindus must have possessed a well developed system of numerical symbols. The conclusion is supported by the fact, that the Greek and the Roman numerical terminologies did not

* thus: 1 = I; 2 = II; 3 = III; 4 = IIII; 5 = I; 6 = II; 7 = III; 8 = IIII; 9 = IIIII; 10 = II & so on.

go beyond (10⁴), even after writing and a satisfactory numerical symbolism had been in use for several centuries, in the civilised world."

The earliest inscriptions (i.e.; Asokan) available to us, reveal that the knowledge of numerical symbols was quite common in India, about 2500 years ago. The Brāhmi numerals, evolved on Indian soil, (and perfected perhaps by 1000 B.C., "or earlier". as Messrs. Datta and Singh believe) were freely in use in Buddha's time (7th century B.C.). When the zero was invented, the same numerals from 1 to 9 were continued to be used with the zero added, to complete the quota when required. "This gradual change from the old system, without place value, to the new system with zero and place value, is to be met with in India alone. All other nations have (since) given up their indigenous numerical symbols and have adopted the zero and the new set of symbols" (Datta and Singh).

European writers (barring Cunningham) have advocated the view that the Brāhmi numerals had been adopted either from the Semitic signs, or from the late Egyptian (Hieratic or Demotic) script. But there are strong evidences to the contrary; in fact, the theorising of such writers as Bailly, (who traces Brahmi to Sumer and Akkad) is tendentious and slightly imaginative. Regarding the Egyptian origin., most analogies are now found to be unsubstantial, except for the fact that both Brāhmi and Demotic use the same number of signs, (19) for numerals up to 100.* This latter similarity may lead to another conclusion viz., that about 1000 B.C. (when Egypt was in close contact with Mittani), the Egyptians switched over to a new series of numerals imported from a foreign source. (The earlier Egyptians used only 4 signs [1, 10; 20 and 100], but about 1000 B.C., they adopted 19 signs, as in India of that time). We have seen, elsewhere, that Aryan influence was very strong in the Nile Valley from 1500 B.C., onwards; this sudden mathematical change-over can plausibly be put down to Aryan influence, a view that is strengthened by the fact that the cursive forms adopted for some

* It is curious that in Mexico also, the Mayas had the same number of signs for numerals, vide Vol. II, Chapter IX. They also used the thick and thin lines, for numbers.

numbers (2, 3, 4) are really unsuited to a script (written, unlike Brāhmi, from right to left) on the papyrus.*

Word numerals :

The system of expressing numbers by conventional words or concepts was a hot favourite with the Hindu writers, probably, because of their weakness for poetry. The system probably got perfected by about 100 B.C., and seems to have even travelled to Europe, via Arabia. I give below the word signs for figures from 0 to 10 as commonly used in Sanskrit poetry. (The quotation is from the admirable work of Profs. Dutta and Singh, already cited).

0 “is expressed by sūnya, kha, gagana, ambara, akāsa, abbra, vijat, vyōma, antariksa, nabha, jaladhārapatha, pūrṇa randhra, vishnupāda, ananta, etc.

1 “is expressed by ādi, sasi, indu, viddu, candra, kalādhara, himgu, sitarāsmi, paralēyamsu; sōma, sasāṅka, mrgāṅka, hymaskara, sudhāmsu, rajanīkara, sasādhara, svēsa, abja, bhū, bhūmi, ksiti, dhara, urvard, gō, vasundharā, prithvī, kāma, dhārani vasudhī, ila, ku, mathi, rūpa, pitāmaha, nāyaka, etc.

2 “is expressed by yama, yamala, asvin, nāsātya, dasra, lōcana, nētra, aksi, drati, caksu, ambaka, nayana, iksana, paksa, babu, kara, karna, kuca, otha, gulpha, jānu, jangha, dvaya, dvanda, yugala, yugma, ayana, kutumba, ravichandrau, etc.

3 “is expressed by rāma, guna, triguna, lōkā, trijagat, bhuvana, kāla, trikāla, trigata, trinētra, baranētra, sabodarab, agni, anala, vanni, pāvaka, vaisvānara, dahana, tapana, būtasana, jvalana, sikhin, krisānu, hōtri, pura, ratna (Jaina) etc.

4 “is expressed by vēda, sruti, samudra, sāgara, abdhī, ambhōdha, ambhōdhi, jaladhi, udadhi, jalanidhi, salilākara, visanidhi, vāridhi, payōdhi, payōnidhi, ambudhi, kēndra, varna, āsrama, yuga, truya, kṛita, aya, dis, bandhu, kōstha, gati, etc.

* Indian writers generally believe that the Egyptians might have borrowed their refined numērology from India, sometime after 1500 B.C.

5 “is expressed by bāna, sara, sastra, sāyaka, isu, bhūta, parva, prāna, pavana, pāndhava, artha, visaya, mahābhūta, tatva, bhāva, indriya, ratna, karaniya, vrāta, etc.

6 “is expressed by rasa, anga, kāya, ritu, māsārdha, darsana, rāga, ari, sāstra, tarka, kāraka, lakhya, dravya, khara, kumāravadana, sanmugha, etc.

7 “is expressed by maga, aga, bhūbhrit, parvata, sailasala, adri, giri, risi, muni, yati, atri, vara, svara, dhātu, asva, turaga, vāji, haya, chandah, dhī, kalatra-tatva, dvīpa, pannaga, bhaya, mātrika, vyasana, etc.

8 “is expressed by vasu, ahi, nāga, gaja, danti, dvirāda, diggaja, hastin, ibha, mātanga, kunjara, dvīpa, puskarin, sindhūra, sarpa. taska, siddhi, bhūti, a nustubha, mangala, anika, karman, durita, tanu, dik, mada, etc.

9 “is expressed by anka, nanda, nighi, graba, randhra, chidra, dvāra, gō, upēndra, kēsava, durga, labdha, labdhi, etc.

10 “is expressed by dis, dik, disā, asa, anguli, pankti, kakub, rāvanasira, avatāra, karman, etc.”

In the Vedas, we do not find word-signs for numerals but the converse. In the Rig Veda, twelve denotes a year (i.e. 12 months) and the No. 7, the seven rivers, the sapta rishis, etc.* The earliest occasion in which a word is used for a whole number is in the Satapata Brāhmana (2500 B.C.). The Upanishads (1500 B.C.) contain many instances, as also the Vēdānga Jyōtisha of 1200 B.C. Subsequently, many examples have been found in epigraphic monuments, in and outside India; and later Sanskrit literature is replete with this device.

As regards the use of alphabet letters for numbers, it is surmised that even in Rig Vedic times, the practice must have been in vogue. There is a reference to the marking of cow's ears by the owners, with numerals, like 8, (which probably must have

* In the famous Hymn of Rivers (Rig Veda X (6) 7) the Sapta Sindhu are cited thus “They flowed by sevens through the three worlds.”

been alphabetical in 5000 B.C.) The Atharvan calls such marking 'lakshma', and refers to the 'mithuna' mark. Pānini also mentions the practice of branding cattle with lakshanas on the body, the ears etc.* Pānini further indicates the conventional use of the alphabet for certain numbers (A=1; I=2; U=3; and so on).** Āryabhata (5th Century A.D.) actually invented an alphabetical system of notation, for use in his Astronomy. Mention may also be made here of the Katapayādi system (whose inventor is said to be Vararuchi of Kerala, of the 5th Century A.D.), in which Sanskrit consonants are substituted for numerals from zero, the conjoint vowels having no numerical significance. This enables skilled persons to coin chronograms, which indicate the number required, and at the same time have a pleasant meaning; (e.g. thathvalokṣ=1346). The Aksharapalli system, rather popular in South India, particularly Kerala, uses the letters of the alphabet for the pagination of manuscripts. Some learned critics think that the Vedas (particularly the Atharvan) have used the Katapayādi system, to convey to the cognoscenti an esoteric knowledge of arithmetical formulae, hidden in the verses. An eminent Āchārya† claims to have thus extracted valuable mathematical information from the Vedas, by applying the Alphabetical Code, in which the same number may have several phonetic equivalents. The so-called 'Vākyaṃ' system of Calendrics in use in South India, is only a variant of the Katapayādi system.

As already mentioned, the zero symbol was in use, for a long time before it was actually incorporated in literature, and this was done by Pingala (circa 300 B.C.), in his Chanda-Sūtra. The famous Bakshali MS. (Circa 200 A.D.), applies the zero in many calculations. In the time of Varāhamihira, the sūnya had become a well established mathematical symbol: it was written originally as a dot, and later on as a small circle, (called sūnya-hindu).

* The use of the numerals for marks is evidence of the wide-spread knowledge of writing and of numbers, in those ancient times.

** This is usually referred to as the Alphabet Mathematical Code.

† H. H. the late Sankaracharya of Puri, in his posthumous work "Vedic Mathematics", which I have commented on, in a Note to this chapter.

It will be clear from the foregoing remarks, that by the century preceding the Christian era, both the place-value notation and the zero symbol had become part of the stock-in-trade of Indian mathematicians. In Europe, the first traces of the place-value notation are found only in the 10th Century A.D., but the numerals, as we know them to-day, came into general use only in the 17th Century. Europe learnt the science mainly from the Arabs, who got it from old Persian and Sanskrit books. During the reign of Khalif Al Mansur (750 A.D.), much material was collected by his scribes from India, and translated into Arabic.* The Indian numerals in the 'ghobar' (literally, 'dust') form were thus gradually adopted in the Near East. It is not clear when Hindu mathematics permeated Europe; Gerbert, a French monk who became Pope in 999 A.D., wrote a book, in which he has used only Roman numerals. It would appear that modern notation came into general use in the West only by the 13th century. Leonardo of Pisa studied the system under a Moor, and in his work 'Liber Abaci' (1202 A.D.), he explained the accuracy of the Hindu science, *vis-a-vis* the old one, and his book became a classic, despite the protests of the abacists, who could not use the zero and were, therefore, likely to be thrown out of circulation.** In brief, it is due to numerous Syrian and Arabic scholars, for example Mohd. Bin Quarizmi, Sebokht (662 A.D.), Al Masudi (943 A.D.), Al Biruni (1030 A.D.) among them, that Hindu ideas of mathematics spread to the Near East and from there, to Europe. As Basham says, "The Arabs themselves called Mathematics, 'Hindisat' (i.e., Indian Art) and there is no doubt

* To quote Colebrooke; "An Indian astronomer, well-versed in the science, visited the court of the Khalif in A.D. 773, bringing with him the tables of the equations of the planets according to the mean motions, with observations relating to solar and lunar eclipses and the ascension of the signs. Only one of the three Indian doctrines of astronomy was understood by the Arabs i.e., what is called 'Pigar' by them" — (Pigar is a corruption of Paitamaha or Brahma-siddhanta.) The other two systems were known as Aryabhatiya, and Arkha, or Surya-siddhanta.

** Leonardo says, in his Preface to the 'Liber Abaci', that he was grounded by the Barbary scribes in the Indian method of accounting by nine numerals. "I taught the Indian method so that the Latin race might no longer be found deficient in the complete knowledge of the methods of computation" he adds.

that the decimal notation and other mathematical lore was learnt by the Muslim world from India".*

Let us now turn to Hindu arithmetic. Brahmagupta mentions 20 operations, and 8 determinations, in arithmetic, as below :

"He who, distinctly and severally, knows the twenty logistics, addition etc., and eight determinations (including measurement by shadow) is a mathematician".

The twenty logistics, according to Prithūdakaswāmi,† are : — (1) samkalita (addition), (2) vyavakalita or vyutkalita (subtraction), (3) gunana (multiplication), (4) bhāgahara (division), (5) varga (square), (6) vargamūla (square-root), (7) ghana (cube), (8) ghana-mūla (cube-root), (9-13) pañca jātī (the five rules of reduction relating to the five standard forms of fractions), (14) trairāsika (the rule of three), (15) vyasta-trairāsika (the inverse rule of three), (16) pancharāsika (the rule of five), (17) saptarasika (the rule of seven), (18) navarāsika (the rule of nine), (19) ekāda-sarasika (the rule of eleven), and (20) bhānda-pratibhānda (batter and exchange). The eight determinations are : misraka (mixture), (2) srēdhi (progression or series), (3) kṣētra (plane figures), (4) khāta (excavation), (5) citi (stock), (6) krakacika (saw), (7) rāsi (mound), and (8) chāya (shadow).

It will be seen that the list excludes 'duplation' and mediation, so essential to the Egyptians, the Greeks and the early European scholars, who were ignorant of the place value notation. Famous Indian works connected with this improved scheme of arithmetic are the Bakshali MS, (200 A.D.), the Ganita-sāra-sangraha (850 A.D.) and the Lilāvathi of Bhaskara II (1150 A.D.). In addition, a large number of astronomical works (called Siddhāntas), usually carried a section on arithmetic, after Āryabhata's time, (5th century A.D.). Hindu mathematics, however, suffered from serious disadvantages, from the very beginning. These were : the use of verse in most cases, making arithmetic rhetorical

* "The Splendour that was Ind", by A. L. Basham.

† The commentator on Brahma Gupta, often disagreeing with the latter.

instead of symbolic; the extreme brevity of the text books, (perhaps, owing to shortage of writing talent), and the need for total memorisation, not only of the tables of multiplication etc., but also of all the sūtras or formulae. Teaching became personal and rather mechanical, and much depended on the quality of the instructor. In normal times these difficulties were not insuperable and Hindu India managed to produce some of the finest schools of mathematicians the world had ever seen. But with the dissolution of the Hindu kingdoms and foreign onslaughts from fierce and un-lettered hordes, all science, like all art, languished. In fact, after the death of Harsha (7th century A.D.), there was something of a Dark Age in Aryāvarta, the crisis in which was accentuated by the subsequent Mussalman rule and the internal strife and disorder, which left little time for the intelligentsia, to cultivate the learned and gentle arts of peace. Kashmir and South India survived for a few centuries after Delhi was over-run by the idol-breakers, but in course of time, they also succumbed to the benumbing influence of an alien domination, completely out of tune with the spirit and culture of the Hindu people. Bhāskara II (12th century) was the last great Hindu mathematician, and his influence lasted for over 700 years, during which period, however, little original work was done. If only the plant of Indian mathematical genius, which flowered so splendidly in the early years of the Christian era, had grown into a fruitful tree, many of the scientific achievements of the 19th and 20th centuries, would probably have been anticipated, in India, by many years.

As mentioned above, great and distinctive contributions were made by Indian mathematicians, prior to 1200 A.D. To mention all of them, in detail, will be beyond the scope of this writing, but a brief summary may be attempted. The Hindu scientists were aware of all the fundamental operations of mathematics, and the knowledge of these was taken for granted, in advanced treatises. Addition by direct and inverse process was well known; similarly also subtraction. The Hindus knew of multiplication as *gunana*, which term appears in Vedic literature. Āryabhata assumes its wide knowledge in his works, particularly, the method known as *kapata-sandhi*. There were actually 7 distinct

methods in use, like gelosia, cross multiplication (thastha), multiplication by separation of places (sthāna), zig-zag (gomūtrika), parts-multiplication, and algebra (istaganana) and all these are known to have been transmitted to the West by the Arabs. (Al Nasavi, Al Hassar, [12th Century A.D.] etc., mention these systems as Tarik-al-Hindi, in their books). With regard to division, (bhāgahara, or bhājana) which was considered to be difficult in the West for a long time, very easy systems had been evolved in India, in the early years of the Christian era. Most Siddhānta writers assume its common knowledge, which knowledge was gathered by the Arabs, (as is evident from the works of Al-Quarizmi and Al-Nasavi) and transmitted to the Occident. Bell* mentions, that a 12th century Latin translation of a lost tract of Al Quarizmi on Hindu numerals, is said to have done much to acquaint Europeans with that great invention.**

To come to square and cube-roots : the Sanskrit name for square was varga, which Aryabhata defines as the product of two equal quantities. It became important to the text-book writers, because it was the inverse of the square root. The same considerations applied to the cube, (Sanskrit-ghana), defined by Aryabhata as 'the continued product of 3 equal numbers and also a solid having 12 equal sides or edges'. The Sanskrit term for root is mūla or pāda ; (varga mūla=square root ; ghana mūla=cube root) and the term was in wide use from 100 B.C.. The expression was borrowed by the Arabs, who called it jadhr (i.e.; reverse of square); the Latin term radix (or root) is the same as mūla. The system of extracting square roots, mentioned in Siddhānta works, is copied almost word for word by the Arab writers of the 8th Century A.D., but Europeans adopted it only in the 14th and 15th centuries. As regards cube-root, Āryabhata gives a detailed description of its extraction, which the Arab writers later copied. About the process called 'checking by

* In his 'History of Mathematics'.

** Regarding Mohd. Bin Quarizmi, Cossali observes thus : "Of the origin of Algebra among the Arabs, what is certain is that Mohd. Bin first taught it to them. History presents in him a Mathematician of a country most distant from Greece and contiguous to India, skilled in the Indian tongue (Sanskrit) and of Indian matters which he translated, epitomised and adorned".

nines", well known to the Hindu from the earliest times, its first mention in Arabia is by Avicenna, in 1020 A.D., who calls it the Hindu method, an opinion shared by Maximus Planudus.

Coming to fractions, these are profusely referred to in Vedic literature. The Rig Veda cites several fractions (a fourth, half, three-fourths etc.), as also the Maitrāyaṇī Samhitā; (one sixteenth-kāla; one-twelfth-kusthā; one eighth-saptha; one fourth-pāda). In the Sulbha Sūtras* (800 to 600 B.C.), fractions have been extensively used in building operations. Composite fractions were unknown in ancient times, outside India. The Indian term for fraction (bhinna) was translated in Europe as fractio, rought, rocto etc., conveying the same meaning. In addition to normal fractions, Hindu treatises mention six jātis or classes, for numbers of the forms; other terms used are, bhāga, amsa, and kāla. Fractions were written by the ancients as now, but without the dividing line; the device of reduction to the lowest terms (called apavarta) was well-known, as well as that of reduction to a common denominator, described by Śrīdhara thus :

"To reduce to a common denominator, multiply the numerator and the denominator of each fraction, by the other denominations."

Combinations of fractions were divided into 4 classes; i. e. phaga, prabhāga, bhāgambanda and bhāgaparaha. Mahāvīra (9th century A. D.) was the first among Indian mathematicians to deal with the L. C. M., (called niruddha). The ancients also

* Sulva or Sulbha, means a measuring rod or string. Sulbha Sūtras are part of Śrauta-literature and constitute India's oldest books on Geometry. They are mostly pre-Buddhistic and deal with the construction of altars, vedies, etc., and they go back to the 8th Century B.C.. To quote G. R. Kaye (Indian Mathematics - P. 6). "The Sulbha Sūtras give constructions, by the help of the Pythagorean theorem, of (1) a square equal to a sum of 2 squares; (2) a square equal to the difference of 2 squares; (3) a rectangle equal to a given square and vice versa; (4) the decrease of a square into smaller squares. They also attempt the problem of squaring a circle." Kaye is inclined to belittle Indian achievements and makes the astounding statement: "There is nothing in these (Sulva) rules to justify the assumption that they (the authors), were experts in long calculations" !

knew of such operations as addition, subtraction, and multiplication of fractions, and their division under the Rule of Three, Squares and square roots, cubes and cube roots, were also cognized by Brahmagupta (6th century A.D.) and by Śrīdhara of a slightly later date. To quote the former :

“The square root of the numerator of a proper fraction divided by the square root of the denominator, gives the square root (of the fraction). The same would apply to the cube root”.

The Hindu terminology for the Rule of Three is *trairāsika*, (“three terms”) which is used in the Bakshali MSS and all other later treatises. The three constituents are called *pramāna*, *phala*, and *icchā*. In the words of Mahāvira :—

“In the Rule of Three, the *icchā* (requisition) and the *pramāna* (argument) being similar, the result is the product or the *phala* (fruit), and the *icchā*, divided by the *pramāna*.”

The Rule of Three was also inversed, under the name ‘*vyāstra trairāsika*’. These devices were so highly appreciated by the ancients, that Bhaskara II says: “The Rule of Three is indeed the essence of arithmetic; whatever is calculated, is a variation of this Rule, nothing else”. The Rule appeared in Arabic and Latin books of the 8th and following centuries, with an Indian connotation. It was even eulogised as the ‘Golden Rule’, by early European authors on Mathematics.

The Hindus naturally progressed to Rules of Five, Seven, Nine etc., according to the terms involved, and Āryabhata I impliedly refers to them. The Rule of the Odd Terms, was the general name given to all these devices by Bhāskara I and his successors, and they were used in many problems, commercial or purely intellectual. In the calculation of monthly interest (described as early as the 8th century B. C., by Pāṇini), the Rule became handy, even in cases where quadratic and simultaneous equations were involved. In barter and exchange, the device served a useful purpose, as also in partnership accounts.

Under the name *ista-karana* (supposition), the ancient mathematicians dealt with *Regula Falsi*. (There is a medieval MS, attributed to Rabbi Ben Ezra, in which this device has been

attributed to the Hindus). The method of inversion (*vilomagati*) was in use in India from pre-Christian times and the text book writers pose many problems involving its use. The mathematics of zero also had received detailed attention from our experts; various definitions and explanations were given of the properties etc. of zero but one quotation would perhaps suffice, to indicate the progress achieved. Aryabhata II says: "If zero is added to a number, it is unchanged; the same is true when zero is subtracted. In the operation of multiplication or division of zero (by another number), the result is zero".

Hindu Algebra :

The adoption, by the West, of the Arabic name *al-jabr*, (adjustment) shows that the science of algebra was borrowed by Europe from the Arabs, and ultimately from India.

As already mentioned, in ancient India algebra was known as *bija ganita*, (element analysis). The name *kutta ganita* or *kuttaka* (pulveriser), was also given to it, as also that of *avyakthaganita*, (calculation of the unknown). This last appellation differentiates algebra from arithmetic, which deals with known symbols, (*vyaktha*). Bhāskara II remarks as follows :

"Mathematicians have declared algebra to be computation attended with demonstration : otherwise, there will be no distinction between arithmetic and algebra".

In his two works, *Lillīāvati* and *Bījaganita*, this ancient mathematician (one of the cleverest the world has ever seen) has well demonstrated the fine distinction he has drawn. He divided this branch of mathematics into 2 parts; one dealing with *bija* as such, and the other with the laws of signs, including negative quantities, zero functions, operations with unknowns, surds, indeterminate equations of the 1st degree, and the square-nature, (the so-called Pellian equation). Many algebraic symbols, including the radical sign, owe their origin to Bhāskara.

The origin of Hindu algebra is traceable to the *Sulbha Sūtras* (of Bōdhāyana, Āpastamba etc.) of 800 to 600 B. C. as

well as to the Brāhmana literature of circa 2500 B.C., where however, the problems were mostly geometrical. In the words of Datta and Singh,* “the geometrical method of the transformation of a square into a rectangle having a given side (described in the Sulbha) is obviously similar to the solution of the linear equation with one unknown viz., $ax=c^1$. The quadratic equation has its counterpart in the construction of an altar, similar to a given one but having a different specific area”. In the construction of the mahāvēdi (great altar) and the syēnachiti (the eagle platform) such geometrical algebra was often in requisition. The altars required bricks of several shapes and sizes, and they were to be placed according to set rules, and not at random. As Dr. P. V. Kane says, “a sound knowledge of geometry and mason-craft was required in the building of the altars”. ‡

Reference may also be made to the intricate geometrical designs called ‘chakras’, which were used in rituals and in temple worship. It is claimed that, without a good knowledge of geometry, it would not have been possible to construct these chakras. Some technical terms used in algebra by our ancients, were :—

coefficient -- gunaka or gunākāra or anka

unknown quantity -- yāvat-tāvat; kanika; gulika (shot)

power — varga, guna, vargā-varga, etc.

equation — samā-karana, or simply samā-also sadristi-karana.

side — paksha

absolute term — drisya, also rūpa

addition — symbol yu (yuta = added)

subtraction — symbol kha (kha or khshaya written — as in Brāhmi); later on, a dot was used, for a minus sign

multiplication — gunitha or gu, meaning ‘multiplied’.

division — bha, (bhāga).

square root — gunitha ka (karani) = root or surd.

* “History of Hindu Mathematics”.

‡ “History of Dharmasastra”.

unknown — *adrisya*, denoted by zero; apparently coloured shots were used on boards, to represent 'unknowns', which were also called *varna*, meaning both colours and letters of the alphabet. First letters of colours like *ma* (for *manikya* or ruby) *ni* (for *nila* of sapphire), were used by *Bhāskara II*, as symbols for unknowns. (They are similar to the *a, b, x, y* etc. of modern algebra).

elimination of middle term — *madhyāharana*.

Elaborate formulae were laid down for the Laws of Signs. For example; *Brahmagupta* (6th century) observes:

"The sum of two positives is positive; or two negatives, negative; of a positive and negative the difference.

"The product of a positive and a negative is negative; of two negatives, a positive. Positive divided by negative is negative.* Negative divided by negative becomes positive".

The fundamental operations for algebra were the same as for arithmetic, viz. six, the cubing processes not being specifically included. The statement of an equation was called *nyāsa* and the clearance was called *samsōdhana*, the length of the latter being dependent on the number of unknowns. Equations were classified as simple (*yāvat-tāvat*), quadratic (*varga*), cubic (*ghana*), and bi-quadratic (*vargā-varga*), and so on. (These terms are found in a canonical work of 300 B.C.) The method of classifying equations according to degrees, was well realised and the treatises deal with linear equations with one, two, and several unknowns and also simultaneous equations, (called *sankramana*). Our pundits were able to solve, in the 5th or 6th century A. D., indeterminate equations of the 2nd degree, which were unknown in Europe until the time of Euler, 1000 years later. Elaborate instructions, with illustrative processes, were given and a number

* *Bhaskara* takes a different, and correct, view, *vide infra*.

of problems were then set for the student for solution. Quadratic equations are mentioned in the well-known *Bakshali MSS.* and by later writers, like *Āryabhata I.* Even Bell, (who is not over-generous in his appraisal of Hindu achievements) admits that *Āryabhata* secured arithmetical progressions, solved determinate quadratics in one unknown, and indeterminate linear equations in two unknowns, and used continued fractions. Bell observes that "Hindu mathematics touched its golden age with *Brahmagupta*, who framed rules for negatives, obtained one root for quadratics, and gave the complete integer solution of $ax \pm by = c$ where a, b, c were constant integers. He also discussed the so-called Pellian equation". [*Bhāskara I* also gives his definitions and rules for the above solution. It was thoroughly realised that the quadratic had two roots]. With regard to equations of higher degrees, cubic and bi-quadratic, it would appear that our ancients achieved no spectacular success; but *Bhāskara II* applied the *madhyaharana* method to these equations also, to reduce them to simple forms by convenient transformations, and by the introduction of auxiliary quantities, thus anticipating modern methods. *Bhāskara*, however, optimistically concludes that, "if due to the presence of cube, bi-quadratic etc., the work of reduction cannot proceed any further, after the performance of such operations, for want of the root of the unknown side, then the value of the unknown must be obtained by the ingenuity of the mathematician". *Bhāskara* then gives an example of his own phenomenal ingenuity :—

Example : "What is that number which being multiplied by 200 and added to the square of the number, and then multiplied by 2 and subtracted from the fourth power of the number, will become one myriad less unity? Tell that number, if thou be conversant with the operations of analysis.

"Solution : Here the number is x ; multiplied by 200 it becomes $200x$; added to the square of the number, it becomes $x^2 + 200x$; this being multiplied by two becomes $2x^2 + 400x$; by this being diminished from the fourth power of the number, namely x^4 , it becomes $x^4 - 2x^2 - 400x$. This is equal to a myriad less unity. Equi-clearance having been made, the two sides will be :—

$$x^4 - 2x^2 - 400x = 0x^4 + 0x^3 + 0x + 9999.$$

"Here, on adding four hundred x plus unity to the first side the root can be extracted, but on adding the same to the other side, there will be no root of it. Thus, the work (of reduction) does not proceed. Hence, here ingenuity (is called for). Here adding to both the sides four times the square of x , four hundred x and unity and then extracting roots, we get :—

$$x^2 + 0x + 1 = 0x^2 + 2x + 100$$

"Again, forming equation with these and proceeding as before, the value of x is obtained as 11. In similar instances the value of the unknown must be determined by the ingenuity of the mathematician".

Problems connected with simultaneous quadratic equations have been tackled by the Hindu professors, in the same way as indeterminate equations of the 1st degree (called kuttakara or simply kutta, from Sanskrit kutta, to crush); and double equations, of the second degree etc. In the field of geometry-cum-algebra, the earliest Indian solution of the equation $x^2 + y^2 = z^2$ is found in the Sulbha Sutras of Bṛdhāyana, circa 700 B. C. As Will Durant observes: "In the measurement and construction of altars, the priests formulated the Pythagorean theorem several hundred years before the birth of Christ. Āryabhata found the area of a triangle, a circle and a trapezium, and calculated the value of Pi as 3.14136, a figure not exceeded for accuracy till 1423 in Europe."* Āpastamba (6th century B.C.) gives a method for the transformation of a rectangle into a square. Kātyāyana (5th century B.C.) gives an elegant method for finding a square equal to the sum of a number of other squares having the same size. Brahmagupta is the first to give a solution of the equation given above, in terms of integers. Rules are given by other writers for (1) finding rational right triangles having a given hypotenuse (2) finding all rational right triangles having a given hypotenuse (3) finding rational rectangles (or squares) in which the area will be numerically equal to any multiple or sub-multiple of a side, diagonal or perimeter or any linear combinations among them (4) finding all

* Thus G. R. Kaye (Indian Mathematics, P. 12) 'Āryabhata's work contains the earliest record, known to us, of an attempt at a general solution of indeterminates of the first degree, by the 'contrived fraction' process. It may be considered as an introduction to the somewhat marvellous development of this branch of mathematics, in the works of Brahmagupta and Bhaskara.'

rational isosceles triangles having the same altitude (5) all triangles having the same area (6) obtaining rational quadrilaterals, particularly inscribed ones, etc. etc.. Āryabhata drew up a table of sines;* the Surya Siddhānta (500 B.C. ?) "provided a system of trigonometry more advanced than anything known to the Greeks" (Will Durant; trigonometry is Sanskrit trigonamithi; trigona is a triangle.) The use of Sanskrit expressions for this branch of mathematics is strong evidence of its Indian origin. Bell mentions that "A Hindu work of the 4th century A. D., advanced considerably beyond Greek trigonometry, in both method and accuracy giving a table of sines calculated for every 3.75° of the arc of 90° ."

Bhāskara II and the Differential Calculus.

I shall now deal with Bhāskaracharya's claim to be considered as the precursor of Newton, in the discovery of Differential Calculus, particularly in its application to astronomy. Dr. B. R. Seal thinks that the claim is "absolutely established" and that in fact it is "far stronger than Archimedes' to the conception of a rudimentary process of integration". In his calculation of the instantaneous motion of a planet, Bhāskara II (1150 A.D.) takes its successive positions and assumes its speed to be constant in the interval. This tātkālika motion is none other than the differential of the planet's longitude. It is claimed that both the conception of instantaneous motion, and the method of its determination, showed that Bhāskara was acquainted with the principles of Differential Calculus. It is true that some qualification has been laid on this claim. Spottiswoode's criticism, that Bhāskara does not allude to the infinitesimal magnitude of the intervals of time and space involved, can be readily met, since it would appear that the critic himself was in error. As a matter of fact, Bhāskara's unit of time, viz., the Truti, (or Paramānu) is exceedingly small, being almost one-forty-thousandth of a second. Besides, the conception of 'limit' and the computation of errors came very late in the calculi, of fluxions and infinitesimals. Moreover, Bhāskara introduces his formula as a 'correction' to Brāhmagupta's

* In the words of Kaye (ibid P. 11), "The earliest known record of the use of a *sine* function occurs in the Indian astronomical works of this (Āryabhata's) period. There is also a formula for a table of *sines*."

approximations. Finally, Bhāskara himself distinguishes between *sthūlagati* and *sūkshmagati*, (approximate and accurate assessment of velocity) and admits that the former takes into account only *sthūlakāla* (limited time) and not the infinitesimal one, below the range of *Truti*. Average velocity was measured by Bhāskara by the formula $V=S/T$ but he had no unit of velocity and he could not naturally measure the acceleration of celestial bodies. Where velocity is variable, an infinitely small unit of time must be taken but Bhāskara could not achieve this. Spottiswoode, however, pays a tribute to Bhaskara when he says that "it must be admitted that the formula (of Bhāskara) and the method of establishing it, bear a strong analogy to the corresponding process in modern astronomy, (i.e., the determination of the differential in the planet's longitude). Mathematicians in Europe will be astonished to learn the existence of such a process in the age of Bhāskara (i.e., 1150 A.D.)".

A few remarks concerning Varahamihira may be appropriate here, especially since, he is the earliest Hindu astronomer to cite foreign authorities. In a famous verse in his *Bṛihat Samhita*, he says, "(Even though) the Yavanas are of low origin, (yet) when this science (Astronomy) comes to stay with them, their astrologers are worshipped as sages : how much more should astrologers of the Brahmin community be worshipped?". He refers, in his *Pancha-Siddhāntikā* to *Yavanāchārya*, and to *Yavanapuri*. (Alexandria?). These references are, of course, interpreted by Western writers as evidence of the large debt allegedly owed by Hindu astronomers to Greek learning*, as exemplified by Ptolemy of Alexandria (circa 150 A.D.), who taught that the earth was the fixed centre of the universe and that all the planets and the

* SWAMI Vivekananda has this to say on the alleged borrowal from Greece, by the Siddhanta writers; "There may be some similarity between Greek and Indian terms in astronomy and so forth, but the Westerners have ignored the direct Sanskrit etymology and sought for far-fetched Greek roots. That such shallow and biased learning has been manifested by Orientalists in the West, is deplorable". He points out, that the verse of Varahamihira cited above (by me,) has been misinterpreted by Europeans, to wrongly indicate that all Indian Sciences are but echoes of the Greek. The words "come to stay" used by Varaha, obviously, imply a non-Greek source of importation of the science of Astronomy, into Hellas.

sun moved round it ! Let us see what Varāhamihira has to say on this and allied astronomical problems : (The quotations are from the Pancha Siddhāntikā — Chapters XIII and XV).

- (1) "The round ball of the earth, composed of the five elements, abides in space in the midst of the starry sphere, like an iron ball suspended between magnets.
- (2) "In the North Pole, is Sumēru, the abode of the Gods. Below, (at the opposite pole), are placed the Asuras. As the reflections of men standing on the brink of water are seen with faces downwards, so the gods consider the condition of the Asuras to be : the Asuras think vice versa.
- (3) "Just as in the region of men, smoke rises upwards and heavy objects thrown up, fall back on the earth, so also it happens below in the region of the Asuras.
- (4) "One degree of longitude answers to $8 \frac{8}{9}$ th yōjanas on the earth. Thus, there is effected by ninety degrees (a difference of) 800 yōjanas ; what is sunrise for one observer, is noon to another in a place distant to that extent.
- (5) "Some (astronomers)* maintain that the earth revolves as if it were placed on a revolving engine." (Varāha does not accept this view for the reason that if this were so, birds going up in the air will never come back to their nests on the earth ; later on he changed his mind.)
- (6) "The circumference of the earth (360 degrees), is equal to 3200 yōjanas" (i.e., 24,320 miles taking the big yōjana at 7.6 miles, and not allowing for the height of the atmosphere).**

* Aryabhata, Latta (or Lata) etc. Very recently, some scientists (e.g., Dr. C. V. Raman) have doubted if the upper atmosphere moves with the earth.

** Aryabhata fixed the earth's circumference at 3393 (big) yojanas, including the atmosphere.

- (7) "Ujjaini is 24° north latitude from Lankā (a small imaginary island, [not Ceylon,] lying on the equator). It is, therefore, 66° from Mēru, or the North Pole. (Modern atlases give the latitude of Ujjaini as 23.9° north),
- (8) "At Mēru (North Pole), the signs, (the six asterisms named by Varāha) revolve constantly above the horizon and the sun is visible as long as he stays in these six signs i.e., for six months. The Asuras (South Pole inhabitants) have a night of six months there.
- (9) "The people of Lankā (an imaginary island lying on the equator) see the Pole Star, (Dhruva) on the horizon; those on Mēru, in the zenith.
- (10) "The moon being constantly placed below the sun (i.e., facing it), one half is illuminated by the sun's rays, while the other half is obscured by the moon's own shadow.
- (11) "Following experts, I give the following explanation :
An eclipse of the sun takes place constantly; only due to positions, it becomes visible in some locality.
- (12) "The beings in Mēru (North Pole) or near it, never see an eclipse of the sun, owing to the fact that the sun and the moon for them is not high enough above the horizon.
- (13) "The rule about the days of the week is not everywhere the same; as no decisive reason can be assigned, the astronomers disagree concerning the point".*

* Varahamihira says that the 'vara' has to be determined by the shargana, which itself depends on time and place. Some reckon it from sunset (as done by Latacharya at Yavanapura), while Simhacharya takes it as sunrise in Lanka. Varaha even accuses Aryabhata of inconsistency here.

- (14) "What is sunrise in Lankā, is sunset in Siddhāpura, mid-day in Yamakōṭi and midnight in Rōmaka Country." (The places named are uncertain. Rōmaka country may be Rome, which is roughly 54 degrees to the west of Ujjain and can account for a difference of about $4\frac{1}{2}$ hours in time. Varāhamihira places Rōmakadēsa to the west of Yavanapura or Alexandria. Varahamihira also mentions Kētumāla, as a very distant anti-podal country. Can this be Gautemāla, in Central America? In Vedic times, the Hindu-Kush region was named Kētumāla—a name which *could* have been carried to the New World by the Aryans, as I have suggested elsewhere in this book (vide Vol. II, Chapter IX).
- (15) (Describing the qualifications of an astronomer): "He should be familiar with Earth's rotation on its own axis and round the sun and also with its revolution in the stellar firmament; its (earth's) shape etc., and the latitude of a place. He should be able to calculate the distance of each planet from the earth (in yōjanas) the length of its orbit, etc. He should be familiar with shadow and water appliances.* In the matter of solar and lunar eclipses he should be able to predict the time and duration." The sage adds: "In her own eclipse, the moon enters the shadow of the earth, and in that of the sun, the solar disc. Thus, the

* Regarding astronomical appliances referred to above, the Surya Siddhanta (5 Century B.C.?) has this to say: "The astronomer should have a sphere to examine the apparent latitude and longitude". The Siddhanta Siromani, commenting on this sloka, observes that "a sphere or gola-yantra, should be made like an 'armillary sphere' having a number of rings. An intersectory circle called "Vedavalaya", graduated for degrees and minutes, should be suspended on the pins of the axis of the yantra. The axis should point to the pole and the horizon rendered true by water-level. The stars should be observed through a sight fitted to an orifice at the centre of the sphere". The Siddhanta Sundara (a mediaeval work) suggests the use of a "tube adapted to the summit of a gnomon and directed towards the star on the meridian". The Sundara gives detailed instructions (for calculating ascensions and descensions of stars, and their longitudes) called 'method by composition' and 'cyclic method.'

causes of eclipses have been given by our Divine masters and seers. The scientific truth is that Rahu is not at all the cause of these (eclipses). (Brihat Samhita, Chapter V).**

** Incidentally, it is lucky for posterity that Arya and Varaha were born in India and not in the Islamic Near East, or in Catholic Italy or France. They would have been stoned to death in Arabia or burnt alive (like Savonarola), for holding such heterodox views as (i) that the world is a sphere moving alone round the sun, and not held up by divine elephants, as suggested in our Puranas; (ii) that eclipses are caused by the earth's or the moon's shadow, and not by Rahu and Kethu. Students of history may remember how Galileo was jailed and threatened with death unless he recanted his theory that the earth moved round the sun, etc. Similarly, Buffon, the eminent French naturalist, had to tender a public apology (in 18th century France) for contending that the Universe was older than 10000 years! Till 1757, it was a capital offence in France to openly deny any of the fundamental concepts outlined in the Bible, particularly the Book of Genesis. As late as 50 years ago, an American Professor (Scopes) was put on trial (at the instance of W.J. Bryan a candidate for American President), for teaching the Darwinian theory of the Evolution of Man!

Our ancients were nothing if not irritatingly tolerant of schism and heterodoxy. No heresy was considered too objectionable, and no atheism too obnoxious. Their broad-mindedness even went beyond this and almost amounted to a positive encouragement of agnostic cults. The study of these intensely materialistic and godless schools like Lokayata and Bhutavada was actually recommended, by sages like Sukra and Kautilya, to the Prince, (along with the Vedas). As samples of the doctrines preached by these schools may be cited the following verses, attributed to them.

पशुचेहिहतास्वर्गं ज्योतिष्टोमे गमिष्यति ।
स्वपिता यजमानेन यत्न कस्माच्च हिंस्यति ॥

Meaning : If a (sacrificial) goat entering the oblation-fire attains heaven why does not the Yajamana throw his own father into that fire (so that the latter may go straight to heaven)?

अथोवेदस्य कर्तारः बाण्डाः धूर्ताः निशाचराः ।
अर्पयि दुर्परी इत्यादि पण्डितानां वचनं स्मृतम् ॥

Meaning : The authors of the three Vedas are rogues, cheats and delinquents. Their compositions are comparable to those of Jarpari and Turpari: (two pseudo-poets, pilloried by ancient scholars).

Bell's Views on Hindu Mathematics :

Bell, in his book "Development of Mathematics" makes some severe comments on the Hindus' progress in this science. He considers it strange that Hindu algebraists, who attacked problems of real difficulty, failed to see completely through simple quadratics. "Without an extended number system, it was impossible for the Hindus to create much that even resembled scientific algebra. Further, the imaginaries were discarded as non-existent without attempting to account for their appearance."

With regard to this criticism, I have given enough material in this discourse, which would point strongly to a contrary view.* It will be, perhaps, useful if I quote the opinion expressed by Laplace, more than a century ago, on Hindu mathematics :

"It is India that gave us the ingenious method of expressing all numbers by ten symbols, each receiving a value of position as well as an absolute value : a profound and important idea, which appears so simple to us now, that we ignore its true merit. But its very simplicity, the great ease, which it has lent to all computations, puts our arithmetic in the first rank of useful inventions ; and we shall appreciate the grandeur of this achievement the more, when we remember that it escaped the genius of Archimedes and Apollonius, two of the greatest men produced by antiquity." Further, Basham, the great historian observes as below :—

"The debt of the Western world to India in this respect cannot be over-estimated. Most of the great discoveries and inventions, of which Europe is so proud, would have been impossible without a developed system of mathematics, and this, in turn,

* Even Kaye (as usual, un-enthusiastic about Indian accomplishments in Mathematics) says, "They (Brahmagupta and Bhaskara) give rational integral solutions of $ax + by = c$ etc. The integral solution is given by a combination of methods called 'method by composition' and the 'cyclic method'. These solutions alone are enough to give the Indian works an important place in the history of mathematics." Of the 'cyclic method', Hankle says, 'It is beyond all praise. It is certainly the finest thing achieved in the theory of numbers, before language'.

would have been impossible, if Europe had been shackled by the unwieldy system of Roman numerals. The unknown man who devised the new system, was, from the world's point of view, after the Buddha, the most important son of India. His achievement, though easily taken for granted, was the work of an analytical mind of the first order, and he deserves much more honour than he has so far received.

"Medieval Indian mathematicians, such as Brahmagupta (7th century), Mahāvira (9th century) and Bhāskara (12th century) made several discoveries which, in Europe, were not known until the Renaissance or later. They understood the import of positive and negative quantities; evolved sound systems of extracting square and cube roots, and could solve quadratic, and certain types of indeterminate equations. Earlier mathematicians had taught that $\frac{x}{0}$ was zero but Bhāskara proved that it was infinity. He also established, mathematically, what had been recognised in Indian theology, at least a millenium earlier, that infinity, however divided, remains infinite, represented by the equation : $\frac{\infty}{x} = \infty$ ".*

The Arthasastra of Kautilya lays down elaborate rules for the keeping of state accounts. These accounts presume a high standard of arithmetical efficiency on the part of the accounting staff, right up from the village accountant to the Superintendent of Accounts, at headquarters. It is clear that such a complicated system of accounts would not have been possible, if the fundamentals of mathematics had not been well-grasped by the official hierarchy ; I suggest that this fact should be taken in support of the claim made for Hindu Mathematics, in these writings. While it is true that the text-book writers (in poetry) used, what Bell calls rhetorical numerology, the ordinary people dealing with accounts, in the time of Pānini and Kautilya (6th to 4th century

* A. L. Basham "Indian Heritage—Science and Society."—Bharan's Publication.

Basham refers here to the doctrine expounded in the Isa Upanishad :

पूर्णस्य पूर्णं आदाय पूर्णमेवावशिष्यते ।

"Take the whole from the whole, (yet) the whole remains."

B.C.), must have been very familiar with symbols and similar notational devices.

We have read somewhat of Roman numerology. A word about Greek mathematics may be useful here. It is contended by Bell, that Greek mathematicians of the 6th and 5th centuries B.C., were directly indebted to Babylonian sources, but the Greeks did nothing to justify the great debt they owed to Babylon. In logistic or computation, they "did nothing which is not best forgotten as quickly as possible" says Bell, who adds, "their best attempts to symbolise numbers was a childish scheme, little better than a juxtaposition of the initial letters of the number names. Fortunately for mathematics, Greek numeration quickly perished, especially because of its inability to represent even moderately large numbers, concisely. Archimedes found time to count up to eight powers of ten, but as he missed the place system of notation, his ingenious idea perished. By resorting to the abacus, the Greeks neglected the logistic". In Bell's opinion, historically the most remarkable thing about the progress in the subjugation of number, is that it appears to have been ignored by the Greeks of the 6th century B.C. "The fact that this happened, casts some doubt on the vaunted intelligence of the Greeks. In short, Greek mathematics was vile." (Bell).

It is unfortunate that the Greeks achieved so little in computation, despite their intimate contact with the East, (probably India, and not Babylon). Pythagoras, born in Samos by ancient tradition, appears to have spent some time in India. In fact, his name is equated by some with Pitha-guru (or eccentric teacher), a derivation which seems to be well justified by the known oddities of his conduct. He was a vegetarian and a tee-totaller and believed in the Stoic mysticism of the East. He believed in the immortality of the soul and its rebirth in sentient bodies. He organised societies of learning and philosophy, on the model of the Jaina Sanghas, to which women were freely admitted, to the scandalised objection of his contemporaries. He is even supposed to have advocated the wearing of white clothes, in the manner of

the Swēthāmbara Jains and he consistently propagated non-violence to all living creatures.*

Thales (550 B.C.) †, Endoxes (400 B.C.), and Manalchas (350 B.C.), were all reputedly students of Eastern mathematics, (most probably of the Aryan branch of the science at Takshasīla or at Pushkalāvati) and had spent some time travelling in India. The same is told of Euclid (280 B.C.), and of Archimedes (250 B.C.). The Greek philosopher, Zeno, was probably a Jena or Jaina, a follower of Mahāvīra's creed. As regards Diopanthas (Dēva Pāda ? 250 A.D.), he is understood to have been, not a Greek at all, but an Asiatic. Upto 1900 A.D., it was customary to ascribe the beginning of Greek Algebra to the latter; but now the claim is disputed. It is true that his predecessors (mentioned above), were men of great intelligence and perception, but they were either mystical or obtuse in their approach to number. They made up the deficiency, in some measure, in geometry and in logic, but in pure arithmetic, they fell far short of the standard of the Hindus, to whom they owed so much. The problem of

* Schrader is firmly of the view that India was the birthplace of most Pythagorean ideas, an opinion shared by Colebrooke. Clement of Alexandria calls Pythagoras, "a pupil of the Brahmins." The Greek was familiar with *Sapta Svaras* and the relation between musical notes and the lengths of the plucked strings. Max Muller holds that, in the 5th century B.C., there were Brahmin philosophers in Greece. "That they were in Greece at the time of Socrates is corroborated by Eusebius, a Greek Churchman; the latter records an interview between an Indian Sophist and Socrates" (Max Muller 'History of Sanskrit Literature'). As regards the so-called Greek words in Hindu astronomy, E. Burghess writes (in his Introduction to *Surya Siddhanta*), "I would remark that we may, with entire propriety, refer them to the numerous class of words, common to the Greek and Sanskrit languages, which passed from Sanskrit to Greek at a period of high antiquity, for no one maintains that Greek is the parent of Sanskrit. The evidence of originality is clearly in favour of the Hindus."

† "When Thales of Miletus predicted the eclipse of the sun on 28-5-585 B.C., he must, undoubtedly, have made use of learning from the East" ('The Ancient World, Vol. I, Page 145). "It has been cogently argued by O. Neugebauer that he (Thales) could not have made the prediction at all" (Ibid, P. 156). "Zeno of Kition (334 to 262 B.C.) was an Easterner, like the last group of Cynics" (Ibid, Vol. II, P. 539). "The Sceptic Philosopher, Pyrrhon (360-270 B.C.), drew something from the idea of 'ataraxia' put forward by Indian ascetics, with whom he was personally acquainted" (Ibid P. 542).

enumeration was solved by the Hindus long before the A.D's. The invention of the zero (called *sūnya* in Sanskrit and translated as ciphar in Arabic, and cypher in Latin), has been rated "one of the greatest practical inventions of all time". (Bell). Gauss, the famous German mathematician, often lamented that Archimedes failed to follow the lead given by the Hindus in this respect, to the detriment of all applied sciences.

The Law of Gravity :

Hindu astronomers were aware of the fact that the motion of a falling body was created by extraneous force. In the astronomical treatises of Āryabhata,* Brahmagupta, and Bhāskara, this force, or attraction, is attributed to the earth, whose attraction could be counter-balanced by volition (as when we raise a weight) or by resistance (as when a body is supported), or by *vāga* (impressed motion), like that of a flying arrow. Even in the case of fluids, which had a tendency to move downward, it was pointed out by Sankaramisra, (in his commentary on the Vaisēshika Sūtras) that their fluidity was only a concomitant of the efficient cause, which was gravity acting on the fluid particles. Hindu experts admitted that certain motions were unexplainable and were due to 'adrishta' or unseen causes**; e.g., the first motion in atoms, the movement of iron towards a magnet, upward capillary motion of

* In the words of Colebrooke, ("Miscellaneous Essays-P. 421,") "Āryabhata affirmed the diurnal revolution of the Earth on its own axis; he accounted for this (motion) by a wind or current of aerial fluid, the extent of which corresponded to a little more than 100 miles from the Earth's surface; he possessed the true theory of solar and lunar eclipses, disregarding the imaginary dark planets of mythology; he affirmed the Planets and the Moon to be essentially dark and illuminated only by the sun; he noticed the motion of solstitial and equinoctial points but he restricted it to a regular oscillation, of which he assigned the limits and the period; he ascribed to the epicycles a form, varying from the circular to the elliptic; he recognised the motion of the nodes and the apsides of all the Primary Planets and the Moon; he fixed the Earth's diameter at 1050 yojanas and its circumference, including the wind, at 3393 yojanas; he defined the circumference of a circle as one of the square-roots of ten. If the yojana contains 4 kros, and taking the kros as 1.9 British miles (i.e., 7.6 miles to a yojana) the Earth's circumference would come to 25080 British miles according to Āryabhata." No wonder Arya has been called, by Colebrooke, the "Prince of all Astronomers."

** Another adhrishta is the origin of the first sin in sentient beings, called also anāthi, in Vedānta.

liquids, etc. The example of gas-filled balloons was not acceptable in this context, says Udayana, (10th century A.D.), as the balloons rose because they were lighter than air. Our astronomers realised that in the case of falling bodies, however, there was no *adrishta*; the force was essentially that of gravity which resulted in a *samskāra* or impressed motion. Here *vēga* and gravity acted together in a coalesced force when a free body fell. The Hindu astronomers were thus on stable ground, with regard to the law of gravity*, but the acceleration of motion in falling bodies, (noted by Galileo in the 16th Century), was not anticipated. It was realised, however, that in the case of the projectiles, like an arrow, the impulsive force, or *vēga*, was ultimately lost, (through friction in the air). The Hindu scientists have not explained how gravity counter-acted *vēga*; Śrīdhara and his school seemed to have thought that impressed motion suspended gravity and when this motion became weak (through friction, etc.), gravity resumed its power. It is clear that our ancients knew of the Earth's pull, nay, the pull of all celestial bodies, as is implied in the Vedic verse which states (of the sun and the planets) 'akrishnēna rajasā vartamāñē nivēsayan' ("moving about your ordered course, through the force of attraction").

Motion of three Axes:

Hindu astronomers defined motion as the change of position of a particle in space. To conceive this, Vāchaspati (circa, 800 A.D.), takes three axes: and the position in space of one particle relative to another, was indicated by distances measured along these three axes. This remarkable theory of Vāchaspati anticipates, in a rudimentary manner, the foundations of solid (co-ordinate) geometry, centuries before Descartes, (18th century).

* Bhaskara II, agreeing with Aryabhata, observes thus: "The Earth stands firm by its own power, without support in space. The Earth possessing an attractive force, draws towards itself any heavy substance situated in the surrounding atmosphere, and the substance appears as if it falls. But the question is whether Earth itself can fall in space, as thought by the Bauddhas and Jainas. If this were so, an arrow shot into the air will not return to the Earth (when the projectile force is spent), since both would descend; nor can it be said that the Earth moves slower and is overtaken by the arrow, for the heaviest bodies fall the quickest and the Earth is the heaviest of all. (Siddhanta-Siromani). Readers will realise that Newton had been anticipated, by several hundred years, in some respects.

Relative motion of the Earth :

Kumārila (6th century A.D.) thought that the apparent movement of the sun, stars, etc., in the heaven was due to the hallucination of the senses. Āryabhata I, Latta, and others believed in the diurnal revolving of the earth from the west to the east, which explained, through the principle of relative motion, the apparent revolutions of the starry heavens in the opposite direction. Āryabhata indulged in speculation, which would be considered rather daring for his times. He explained, in racy verse, eclipses, solstices and equinoxes and maintained that the Earth was spherical and revolved on its axis each day. In his words "the sphere of the stars is stationary and the earth, by its revolution, produces the daily rising and setting of planets and stars"*

Corpuscle theory of light ?

In an interesting passage, Charaka the great physician, (7th Century B.C.), notes three instances of serial motion viz., those of water, sound and light. Chakrapāṇi, the commentator of Charaka, points out that the *santana*, (or wave) of sound travels in all directions, and that this is true also of light; he infers that Charaka was aware of the distinction between a wave and a current; i.e., while in a current particles moved in an un-interrupted series, a wave consisted of vibratory motions, as in water. A ray of light, however, was supposed by Vāchaspati, another commentator, to consist of the rectilinear propagation of infinitely minute corpuscles in all directions with inconceivable velocity, in a sort of conical dispersion. Thus, the so-called corpuscle theory of light propagation, was anticipated by Hindu astronomers in the early centuries of the Christian era.

Hindu Calendar :

It will require a volume to deal with the contribution of the Hindus to the Calendar of the world. I have, elsewhere, adverted

* "The Vedic system of Nakshatra allows the marking of the position of the Sun in relation to the full Moon and also the Nakshatras themselves. The determinations reached by this system are more precise than those of the Zodiac, which has only 12 divisions." [The Ancient World, Vol. I, P. 156.]

to the theory, dear to the Westerners, of the Aryan debt to Chaldea, for the invention of the calendar and the connected tables.* There is every probability that the Aryan astronomers preceded the Chaldean experts, by a large margin of time. Even otherwise, according to my thesis, the Chaldean race was itself an off-shoot of the Indo-Aryan, and the contributions of either geographical area (Chaldea and Sapta-Sindhu) must be taken as the joint achievement of the Indo-Aryan peoples. Apart from this issue, the successes of Hindu astronomers, which are universally acknowledged by foreign critics, constitute an impressive list. They evolved a complete calendar of 12 months on the lunar basis and made it fit into the solar one, by intercalation, even minor errors being corrected periodically ** ; they observed

* The following observations of E. Burghess in his 'Introduction to Surya Siddhanta' are significant :

Referring to the lunar divisions of the Zodiac into 27 asterisms, the solar division of the Zodiac into 12 signs, the theory of epicycles, the evolution of astrology and horoscopy, the naming of the 5 planets and associating them with the days of the week, Dr. Burghess says :

"In reference to no one of these do the claims of any people to the honour of being originators or inventors, appear to be better founded than those of the Hindus. In reference to most of them, the evidence of originality is clearly in favour of the Hindus ; in regard to the most important, the evidence is nearly or quite, conclusive. (Appropos, of the hora division of the day), there is abundant testimony that the division of the day into 24 hours existed in the East, if not actually in India, long before it did in Greece." As regards the association of the planets and the sun with the week-days, Dr. Burghess quotes Wilson as saying, "The origin of this arrangement is not very precisely ascertained, as it was unknown to the Greeks and not adopted by the Romans till a late date. It is commonly ascribed to the Egyptians or the Babylonians but on no sufficient authority. The Hindus appear to have as good a title to this invention as any other people."

** The Surya Siddhanta, Aryabhata etc., assessed the solar year at 365 days and 6 hours, conforming almost exactly to modern calculations. Brahmagupta (628 A.D.) gave the circumference of the earth as 5000 (small) yojanas, i.e., 24500 miles. The Surya Siddhanta estimated the earth's diameter at 1600 yojanas (about 7800 miles) and that of the moon at 480 yojanas (or 2200 miles).

Regarding Astrology, 'The Ancient World', (Vol. I, Page 155,) says : "The beginnings of Indian astronomy do not show that observation of the heavens was used for astrological ends. Their (Hindu's) knowledge of astrological phenomena appears to have risen to a conception of a natural order in the Cosmos (Rta, later Dharma)".

and classified the stars into zodiacal constellations; outside the zodiac, they counted hundreds of star groups, and gave individual names to them. It is not known whether any telescopic contrivances were used by our ancestors, but even in their absence, they were able to locate 3, out of the 7 moons, of Jupiter. It is possible that the wonderfully accurate observatories, built in the 17th and 18th centuries at Jaipur and Delhi, might have had their predecessors in ancient India, which unfortunately are not traceable now.

Unlike the Greeks, the Hindus believed that the planets had real motion and that the apparently different angular motions were due to the difference in their distance from the Earth. The planetary system was supposed to be geo-centric, only for purposes of astronomical constants. As the historian, Basham, observes, "The calculations were reliable for most practical purposes and more accurate than those of the Graeco-Roman world. Eclipses were forecast with accuracy and their true cause understood".

To give another citation:—

"According to the astronomical calculations of the Hindus, the present period of the world, Kali-yuga, commenced 3,102 years before the birth of Christ, on the 20th February at 2 hours 27 minutes and 30 seconds. They say that a conjunction of planets then took place; and their tables show this conjunction. Bailly states that Jupiter and Mercury were then in the same degree of the ecliptic, Mars at a distance of only eight, and Saturn of seven, degrees; when it follows that at the point of time given by the Brahmins as the commencement of Kali-yuga, the four planets above mentioned must have been successively concealed by the rays of the Sun, (first, Saturn; then Mars; afterwards Jupiter; and lastly, Mercury). These then showed themselves in conjunction; and although, Venus could not then be seen, it was natural to say that a conjunction of the planet then took place. The calculation of the Brahmins is so exactly confirmed by our own astronomical tables that nothing but an actual observation could have given so correspondent a result." ("Theogony of the Hindus" by Count Bjornstjarna).

The Indian physicists used the following table of time: (Udāyana's list).

2 Kahanas* = 1 Lava	2 Lavas = 1 nimisha
18 Nimishas = 1 Kasha	30 Kashas = 1 Kāla
30 Kālas = 1 Muhūrta	30 Muhūrtas = 1 day.

The astronomers were, of course, familiar with much smaller units of time. We have already seen that Bhāskara's Truthi was equal to $1/34000$ of a second. The Solar day was taken as the natural measurement of time. The natural measurement of length was the hasta, or cubit, of which there were two sizes, the big and the small. The smallest measure of length cited in the Śilpa Śāstras, (Manuals of Technology) is the paramānu ($= 1/340525$ th of an inch, called also as the trasaranu, by the Nyāya-Vaiśeṣikas). The Vaiśeṣika school maintained that the atoms formed themselves into diads, (dvayānu) and triads (trayānu) prior to forming the minutest of all substances i. e., a molecule. This molecule was supposed to be represented by the smallest mote seen in the sun-beam, falling into a dark room through a slit in a curtain. Thus by about 1000 B. C., the Hindus had evolved the atomic theory, which was so brilliantly propounded by Kānada (i. e., "atom eater"), a long time before the age of Democritus. Kānada believed that all matter, (including air) was composed of atoms and that light and heat were intrinsically of the same substance, (thus anticipating Einstein's ideas of mass and energy). Udāyana taught that all heat emanated from the sun; Vāchaspati, as we have seen, pictured light as consisting of minute particles, striking the eye.

Hindu Ideas of Matter :

Early Hindus divided all elements into the familiar five, and made them the media of the five sense impressions; (earth=smell; air=feeling; fire=vision; water=taste; and ether=sound). As mentioned earlier, the atomic theory was believed in. (Says Basham: "Indian atomism was certainly independent of Greek influence, for Kātyāyana, a contemporary of Buddha taught it

* 1 Kshana - $2/45$ th of a second.

and he was much earlier than Democritus").† There is reason to believe that Kānada himself lived in the 7th or 6th century B.C. The Jainas held the view that all atoms were basically identical, (i.e., not attached to the four elements mentioned above), thus anticipating modern theory. The Jainas contended that the differences in the so-called elements (e.g., air and water) were due merely to the differences in atom-combinations. The Buddhists thought that the life of the atom was only momentary, "thus, in some measure, fore-seeing Planck's quantum" (as Basham observes). The Vaisēshikas believed that the atom was a mere point in space, quite invisible to the eye, and without any dimensions. Indian atomic theories were based, not so much on experiment, as on intuition and logic. "The atomic theories of ancient India are brilliantly imaginative explanations of the physical structure of the world. They are much to the credit of the intellect and imagination of the early Indian thinkers" (Basham).

Metallurgy and Chemistry of the Hindus :

Ancient Indian chemistry developed from two sources, medicine and industry. The manufacture of copper and bronze utensils and weapons, in the age of the Rig Veda (5000-4000 B.C.), makes Āryāvarta the pioneer in this industry. As we have seen earlier, the metallic weaponry of the ancient Aryans was numerous, and highly efficient. Even during the Rig Vedic times, the Aryans had passed on from the Copper to the Iron Age. In the later Vedas,‡ there is unmistakable evidence of the mining of iron ore, (described as syāma-ayas) and the gradual replacement of copper, brass and bronze, by steel, for the finer types of weapons, the tyres of chariots, the shoeing of oxen and horses, and some kinds

† Democritus died in circa 370 B.C., i.e., about 175 years after Buddha.

‡ Both the Yajur and the Atharva Vedas definitely refer to syāma-ayas or iron. "The general opinion is in favour of the view that the Iron Age had already commenced when Rig Veda was composed." ("An Advanced History of India," by Mazumdar, Roy Choudhri and Datta - P. 15). In South India, iron has been found in funerary remains of the 8th century B.C. The Upanishads are familiar with many metals. Thus the Chandogya: "As gold is joined by salt, silver by gold, zinc by silver, lead by zinc, iron by lead, wood by iron, and leather by wood" [IV(17)]. In the Rig Veda, there is reference to artificial iron legs.

of domestic utensils. By the time of the later Vedic literature, the manufacture of fine steel had become a widely distributed industry, whose reputation had, as we had seen elsewhere, travelled abroad to Persia and the Near East, during the early centuries of the 2nd millennium B. C. (The so-called Syrian steel, named Damascus in historical times, was in fact either imported steel made in India or steel made by Indian artisans settled in Syria, under the Mithrani Kings). The ore was smelted in furnaces, the flames being blown by bellows, made of skin, or occasionally, of bird's wings. The 'steeling' process was probably centralised as a royal monopoly down to historical times, and closely guarded as a secret, both in our own country and abroad, wherever the Aryan peoples had carved out a home for themselves. The chemical excellence of the wrought-iron of ancient India has become an object of wonder to all those archaeologists, who had seen the Gupta and other pillars, which have remained rustless even after being in the open, for over 1500 years. [The iron pillar of Dhar (1200 A.D.) is even larger than the Delhi pillar; it is made likewise of wrought iron and is of excellent quality.] The Delhi iron pillar is described, by an English historian, as the product of great skill and labour and superb technical efficiency in preparing the metal, which, because of its purity, has been preserved so long.

There was some knowledge of chemistry and of chemical compounds, even in Vedic times. The Atharvan shows acquaintance with the extraction of chemical essences and inorganic medicines. This knowledge continued to make progress in post-Vedic times, till a comparatively high degree of proficiency was reached in the age of Charaka and Susruta (7th and 6th centuries B.C.) The Arthasāstra contains a wealth of material on mining, metallurgy, and allied industries. The great grammarian, Patanjali, in his treatise on metallurgy, gives elaborate instructions on metallurgical and chemical processes, especially the preparation of salts, alloys, amalgams and the extraction, purification, and the assaying of mineral products. It is very likely that Patanjali was aware of the use of mixtures, called *vidas*, which contained *aqua regia* and other mineral acids *in potentia*. Unfortunately, the *magnum opus* of Patanjali is no longer available, although it

is quoted freely in medical text books of a later time. That the *Rasāyana Sāstra* was very well understood in the century before Christ, is evident from the writings of Nāgārjuna (1st century B. C./A. D.), who specialised in the preparation of mercurial compounds, and devoted an entire book to the subject. Early in the 6th century A.D., Varāhamihira (the well-known astronomer), gave several recipes for the preparation of cement, (a powder which he calls *Vajralēpa*, or a binder as strong as diamond), which cement was used extensively in the temple and palace architecture of the period, the remains of which bear testimony to the excellent quality of this building compound*. In fact, by the Gupta period, India had achieved pre-eminence as an industrial nation and even Imperial Rome looked up to India as the most skilled nation in the world, in such arts as dyeing, tanning, soap-making, glass and cement manufacture. "By the 6th century A. D.", says Will Durant, "the Hindus were far ahead of Europe in industrial chemistry: they were masters of calcination, distillation, sublimation, steaming and fixation, the production of light without heat, the making of anaesthetics and soporific powders, and in the preparation of metallic salts, compounds, and alloys. The tempering of steel was brought to a state of perfection in ancient India, unknown in Europe till our own times. King Porus is said to have selected, as a specially valuable gift for Alexander, not gold or silver, but thirty pounds of steel! The Moslems took much of this Hindu science to the Near East and Europe."† The *Vāsavadatta* and the *Dasakumāracharita* allude to the preparation, out of coagulated mercury, of a chemical

* Varahamihira calls the cement *Vajralepa* or adamantine glue. The first recipe reads thus: "Take unripe tinduka fruits, unripe wood apples, flowers of silk cotton, seeds of sallaki, the bark of dhanvana and vacha trees; boil all to an eighth of the original quantity, combine with sediments of srivasaka (tree-gum), raktabola, guggulu, bakataka, resins of the deodar tree, and of the sanjarasa tree, with atasi and bilwa fruit. This paste is called *Vajralepa* and when heated and applied will last a crore of years. Another glue called *Vajratata* is made from the horns of cows etc., the hair of the donkey, extract of buffalo hide etc., neem fruit, wood apples and raktabola. Another paste known as *Vajrasanghata* consists of 8 parts of lead, 2 of bell-metal and one of iron-rust, as mentioned by Maya, the great architect". (*Bṛihad Samhita*-Chapter 47).

† "The Story of Civilisation."

powder capable of producing deep sleep, of a chemically prepared brick for producing light without fire, (*yoga bartika*) and a powder which acted as an anaesthetic by paralysing temporarily the sensory and motor nerves, (*stambhana chūrnam*).

Hindu Medical Science:

Volumes could be written of the astonishing knowledge possessed by ancient Hindus about human anatomy, bodily illnesses and their cure. The science of longevity was raised to the plane of a Veda, and became a subsidiary of the Atharvan, as early as 4000 B. C. The Rig Veda contains much physiological material and the names of many useful herbs. There are *suktas* in it, which give the names of various parts of the human anatomy, particularly with reference to a disease called *yakshma*,* (which is usually translated as consumption). The Atharvan is *par excellence* a prayer book of healing.† In this Veda, hymns for the cure of disease were known as *bhaishajyāni*. Those intended for prolongation of life and preservation of youth, were known as *āyushyāni*, a term, which later on gave place to *rasāyana*, the Sanskrit equivalent of alchemy. Pearls and gold were considered to be elixir of life; lead was the principal metal of sorcery. Embedded in the midst of charms and spells, is a long list of human physical afflictions, with their symptoms and suggested cures. The Atharvan identified many diseases (including the malignant *takman* or malaria), and prescribed many significant herbal medicaments for their treatment. In this Veda, medicine and magic were mixed; the healer used earthly methods as an adjunct to spiritual therapy. Later on, medicine became more important than the litany; and magic, like the bedside manner, became a mere psychological aid. Medicine and toxicology (or *Vishavaidya*) were specially studied in the *Brāhmanā* period (2000 B. C.), at several centres of learning, presided over by famous *Bhishaks*; (*Takshasilā* was one such famous centre). *Panini*

* Macdonell equates *yakshma* with disease; *Rajayakshma* is consumption, according to him (c/f King's evil, or scrofula).

† "It enumerates most parts of the human body with some approach to accuracy and orderly arrangement", in the niggardly phrases of the Vedic Index.

(born at Salatura, near Takshasilā, and educated at the latter University,) would divide diseases into chronic and acute, contagious (sparsa), and non-contagious (vyāpta or gudha). He calls the doctor agadamkara, and medicines, aushadha. He believes in the three humours (vāta, pittha and ślēshma or kapa), which were fundamental to Hindu medicine. He names acute diseases according to their duration (for example, 'a tertian fever'), or according to symptoms (e. g., ague or shivering), or according to cause, (infection or poison). Patients are classified according to their complaint (e. g. a leper, is a kushta; a convalescent is called glasnu). Seasonal diseases were named after the season (e. g. saradikā rōga—autumnal disease—malaria?). A long list of complaints is given by the grammarian, among which may be mentioned, in particular, the following :

- asvara — either diabetes or painful urination
- kshētryāh — congenital or incurable diseases (i.e., which can be got rid of only in another birth)
- hridrōga — heart disease.
- Sipada — elephantiasis, which is also mentioned in the Atharvan.

The high popularity of anatomical investigation, and the wide distribution of medical learning, is proved by the fact that even a grammatical work like the Ashtādhyāyī contains a comprehensive list of names for parts of the human body and a list of diseases, common and otherwise.

It is clear that anatomy and physiology, (like some features of chemistry), were by-products of Āyurvēda. In the 7th and 6th centuries B.C., India produced some physicians of outstanding calibre, who have left a deep impress on the traditional schools of medical theory and practice, which still claim large adherence in our country.* Dhanwantrī (7th century B.C.)

* The Buddhist text, the Vinaya, ('not given to exaggeration' in the opinion of Dr. R. K. Mookerji) mentions that King Bimbisāra appointed a renowned physician named Jivaka, to attend on the Buddha (7th/6th century B. C.). The book mentions that Jivaka was an adept in surgical operations, like trepanning of the skull, and abdominal openings to cure hernia, etc. Jivaka was trained at Takshasilā.

Charaka takes the lead in this respect and can be called the Father of Indian Medicine. His disciple, Charaka, and his student, Susruta, raised Āyurvēda, to new heights of scientific appeal, both in and out of the country.* By the 6th century B.C., these Hindu physicians were indulging in highly skilled expositions of their art, "describing ligaments, sutures, lymphatics, nerve plexus, fascia, adipose and vascular tissues, mucous and synovial membranes, and many more muscles than even a modern cadaver is able to show". (Will Durant). Susruta deals at great length with surgery, obstetrics, dieting, baths, drugs, infant feeding, personal hygiene, and medical education.

The extant Charaka and Susruta books are, unfortunately, not the originals, but redactions of the latter by Drishadbala and Nāgārjuna respectively.† Some earlier books like that of Agni-vēśa, the disciple of Ātrēya Punarvasu, (8th Century B.C.) have also been lost. Drishadbala imported into the Charaka Samhitā much of the surgical material formerly confined to the Susruta school; in fact, this commentator of Charaka seems to have even improved on Susruta a little, thanks, no doubt, to the passage of five centuries since Susruta wrote his treatise. Nāgārjuna was a famous and versatile philosopher and metallurgist, who fathered the Mādhyamikā school of Buddhist philosophy, in King Kanishka's time. Despite later interpolations, no doubt due to dis-interested and bonafide motives, the existing Charaka and Susruta Samhitās can be taken to roughly correspond to the original works, of those famous authorities.

The allegation that the Āyurvēdic writers attributed to the heart, the functions now found to be performed by the brain, is perhaps not ill founded, since the same view was taken by Plato and Aristotle, no doubt on suggestions from Indian contacts.‡ (Plato is supposed to have stayed in India for some time). Charaka and Susruta, however, understood remarkably well the processes of digestion, the functions of the stomach and the liver,

* Royle says that Hippocrates, the Father of European Medicine, borrowed his *materia medica* from India.

† Drishadbala and Nagarjuna seem to have belonged to the 1st century B. C.

‡ The fallacy still persists; we say half-hearted, cruel-hearted, and sweet-heart, instead of sweet-mind!

and the conversion of chyme into chyle, and the latter, into blood. Says Will Durant, "Anticipating Weismann by 2400 years, Atr̥ya circa 500 B.C.,* held that the parental seed was independent of the parent's body and contained in itself, in miniature, the whole of the parental organisation. Examination for virility was recommended (by Charaka) as a pre-requisite for marriage in men; and the Code of Manu warned against marrying mates afflicted by T.B., epilepsy, chronic dyspepsia, piles, or irrepressible loquacity, (a sign of hysteria). Birth control in the latest theological** fashion, was suggested by the Hindu medical schools, under the theory that, during the twelve days of the menstrual cycle, impregnation was impossible. The development of the embryo in the womb was described with great accuracy: it was even claimed that sex change could be effected by drugs and food, in the initial stages."

In a sense, the Atharvan is a medico-liturgical composition. It contains a lot of magic and charms, but embedded in these are much valuable medical lore. The Ayurv̥eda is an appendix to the Atharvan, and the cures and rituals mentioned in it are in use even today, "often with a success, which is the envy of Western physicians," according to Durant. Charaka, who preceded Hippocrates by two centuries, laid down the professional code for doctors thus: "Not for self, not for the fulfilment of any earthly desire of gain, but solely for the suffering humanity, should you treat your patients and so exceed all (other professions)." The Arthasastra of Kautilya specified that "if a physician treats a dangerous disease without informing Government and the patient dies, the physician shall pay a substantial fine. If the patient dies due to negligence on the part of the doctor, a heavier fine will be imposed. If the physician deliberately prolongs the disease (to obtain more fees), he shall be charged with assault." Vāgbhata, (7th century A.D.) prepared a medical compendium in verse and prose. Bhavamisra, in 1550 A.D., wrote a voluminous book on anatomy and physiology, in which he described in detail

* actually 8th century B. C., is the date of Atr̥ya Puranvasu.

** the so-called rythmical system, which enjoins continence on the six days, preceding and following, menses.

the circulation of blood, a hundred years before Harvey. (In fact, Susruta himself had a good grasp of the principles of blood circulation.) Bhavamisra prescribed mercurial treatment for the new and dreadful venereal disease (called Phiranga-rôgha, or Portuguese disease) which had just then been imported by the Iberians, as an European gift to India, (like the bubonic plague, of later times).

Essentially a surgeon, Susruta describes numerous surgical operations (cataract, hernia, trepanning, and Caesarian section, among them) and enumerates about 120 surgical instruments, including lancets, sounds, forceps, catheters, rectal and vaginal speculums. He dissected dead bodies, (although himself a Brahmin) and was the first to graft upon a torn ear, skin taken from another part of the body. Rhinoplasty (or reconstruction of a broken nose) was a common-place in his surgery. Says Garrison: "The ancient Hindus performed almost every major operation except ligature of arteries". Amputation of limbs, and abdominal explorations were frequently resorted to; fractures were set and hemorrhoids and fistulas removed.* Susruta believed in careful pre-surgical asepsis; smoking the wound with aromatic vapour, was one of the methods of sterilisation adopted. Both Charaka and Susruta mention the use of medicated wines to produce insensibility to pain. Later on, a drug called sammôhini, (Sanskrit—sammôha = swoon) was used as an anaesthetic, in serious operations, (like skull trepanning). Bone-setting reached a high degree of skill, which inherited proficiency is found even to-day, in many parts of rural India. As one author** says: "Ancient Indian surgeons were experts in plastic surgery and retained their lead over the rest of the world, till the 18th century; even the surgeons of the East India Company were not ashamed to learn from the native doctors". The practice of placing broken limbs in (mud) plaster, was known in India three thousand years ago.† Susruta discovered, five centuries before

* Most curiously, for suturing surgical wounds, the mandibles of large ants, (which were forced to bite the wounds) were used; this happened both in India and in far-off Mexico!

** Garrison

† Panini mentions a wheeled chair for disabled persons, called 'Parpa'. Similar contrivances are referred to, in the Vajsaneyi Samhita (XXX. 23.)

the Christian era, that mosquito bites transmitted post-monsoon fevers of some kind. Diagnosis of diseases (of which nearly 1200 were enumerated) was to be carefully done by means of inspection, palpation, and auscultation. The taking of the pulse was itself an elaborate technique, and it was claimed, (as is even now asserted), that the general condition of the body and the presence of many diseases, could be verified by mere palpation. Urine analysis was another favourite method of diagnosis, and it is said that, in Tibet, physicians could initiate treatment merely by inspecting the urine, and without even seeing the patient; fasting (langana) was a favourite medical recipē, and usually preceded medication, which was applied only if the fasting did not cure the patient meanwhile. Hieun Tsang mentions that, in his time, drugs were used sparingly and that as far as possible, dieting was the main treatment, supplemented by baths, enemas, inhalations, urethral and vaginal injections and occasional blood-letting, from selected veins.* In applying antidotes for poisons, especially snake bites, a high degree of know-how had been developed. To quote Will Durant:—"Vaccination, unknown in Europe before the 18th century, was known in India as early as the 6th century B.C.; if we can rely on a text from Dhanvantri, who had said: "Take the fluid of the pock of the udder of the cow upon the point of a lancet, and lance with it the arms between the shoulders and the elbow until the blood appears; then mixing the fluid with blood, the fever of the small pox will be produced". Many of the laws of sanitation prescribed by Susruta and by Manu, seem to take for granted what we moderns, who love new words for old things, call the germ theory of disease." Hypnotism, as a therapy, originated with the Hindus, who often used temple premises for inducing hypnosis. (This led to the later practice of temple-sleep in Egypt and Greece). "The English-men who introduced hypno-therapy into England (Braid, Esdaile and Elliotson) undoubtedly got their ideas, and some of their experience, from contact with India," says Garrison.

The picture of early Indian medicine is one of rapid development, from the spells and curses and the rudimentary

* The medieval European practice, of universal and excessive bleeding, for all and sundry ailments, was never in vogue in ancient India.

surgery and herbal treatments of the Vedic times, to the skilled and scientific approach of the historical period. The physician was always a respected member of society. Charaka expected every medical man to pray, on rising, for the welfare of all beings and not to betray patients, even at the risk of life. Nothing that happened in the house of the sick man should be told outside, nor his condition revealed to those not moved by goodwill to the diseased. Medical help should, as far as possible, be gratuitous to the poor. The provision of free hospitals for man and beast, thousands of years ago, as revealed in the Asokan edicts, and as attested by foreign observers, is an achievement unparalleled in the public administrations of that period, except perhaps in the Persian Empire.

That Dhanvantri, Charaka, and Susruta owed little to foreign influence needs no great emphasis. On the contrary, it is almost universally recognised now that medical knowledge was an export commodity from Āryavarta to all the countries of the Far and Near East, during the centuries preceding, and following, the Christian era. "In the time of Alexander," says Garrison, "Hindu physicians and surgeons enjoyed a well-deserved reputation for superior knowledge and skill, and even Aristotle is believed to be indebted to them". The case was similar with the Persians, who were, after-all, but a branch of the ancient Aryan race. The Persians and the Arabs translated into their language (in the 6th century A.D.) the thousand-year old books of Charaka and Susruta. It is recorded that the great Caliph, Haroun al Raschid thought so well of Indian physicians that he imported some of them into his kingdom to organise hospitals, for both man and beast, and medical schools to train up doctors and veterinarians. A leading authority, (Lord Amphill) concludes that medieval and modern Europe owes its system of medicine, directly to the Arabs, and through them, to India. This noblest, and most speculative, of the sciences useful to the well-being of man, grew its first roots in Sapta Sindhu in the dim past; in the succeeding millennia, its branches spread far and wide over many lands, which were fortunate enough to enjoy the fruits of Indian skill, learning, and humanity. That medical lore travelled directly from India to Greece, (along with the doctors who accompanied Alexander's army back to Europe), is a strong probability. That the Arabs

subsequently borrowed this learning from the Greeks, is indicated by the appellation, 'Unāni' (Yavanāni), given to this new science by the Arabs. The direct contact between India and Greece is strongly established by the terminology used by the Greeks for classifying diseases, as the following illustrative list would show. (Greek "itis" derives from Skt "iti", or affliction)

1. Osteoitis :	Skt.	asti or bone
2. Enteritis :	Skt.	anthrāh or entrails
3. Encephalitis :	Skt.	caphala or skull
4. Neuritis :	Skt.	nara or nerves
5. Calculus :	Skt.	kalkala or stone-pieces
6. Stomatitis :	Skt.	stōma or head (mouth)
7. Gastritis :	Skt.	gatara or stomach
8. Splenitis :	Skt.	pleehan or spleen
9. Genuitis :	Skt.	janu or knee
10. Uterus (Latin) :	Skt.	udhara or abdomen, womb
11. Colic :	Skt.	coola is colic
12. Herpes :	Skt.	sarpa = snake (like)

Science and Indian Transcendentalism :

Attempts have been made, by learned Indian scholars (pre-eminent among whom is Purāgra Parampanthi) to deduce scientific attainments on the part of the Hiudus, from the Vedic, particularly the Advaitic, literature. The following is a summary of the arguments on the subject, but it should be understood that the claims put forward on behalf of the Hindus are not susceptible of mathematical proof or experimental demonstration. They should be treated as daring speculations, and broad generalisations based on brilliant logic, vivid imagination, and unmatched powers of intuition. To those who would ask for algebraic formulae, or laboratory tests, in support of Upanishadic arguments, I would merely point out that Science had been more kind to European savants. When Democritus talked of atoms, he was not expected to produce "cloud chamber photos" or electronic proofs. The bold theories of Archimedes were, in the same fashion, not put to microscopic analysis. The Western scientists, with rare exceptions, have been inclined to treat Hindu science as amateurish at the best, and juvenile guess-work, at the worst. That this rank injustice requires correction, is obvious.

1. *The conception of space or ākāśa, and the idea of time:*

The Greeks (e.g., Empedocles), adopted four of the five elements of the Hindus, (omitting ākāśa). We have seen that, for the Hindus, all matter consisted of 5 elements, of which ākāśa was one. In their horror of vacuums, the Aryans conceived the sky, and indeed all inter-stellar areas, to be filled by an entity called ākāśa, (originally interpreted as ether by the Western scientists, which nomenclature had been discarded "as the theory of relativity wasted away ether," in the words of Jeans.) To the Hindus, ākāśa or space was insubstantial but, none the less, real and was the first step in creation, by Īśvara. Creation of corporeal matter pre-supposed space, since it was the frame work for the phenomenal world. "Space is all pervading, imponderable, and subtle" says the Upanishad. Space, though seemingly infinite, was limited; it could not extend indefinitely or last for ever; Brahman was alone was eternal, as "Brahman is space-less". Space, also is subject to changes and transformations, and hence non-eternal. It had an incorporeal existence and was a positive element, (as opposed to the 'negative entity' theory of the Buddhists). "From space, all phenomena are born, and unto space they all return" in the words of the Upanishad. This Hindu conception of space seems to chime in with that of the modern scientists. To quote Whitehead: "You cannot have things without space or space without things", an idea which is literally echoed by Eddington.

The Hindu theogony does not specifically deal with the time-element in creation, but the Upanishads mention Kāla-kara. Time is essentially circumscribed and dependent on events, in the same manner as space. In this sense, time and space are concomitant and are the instruments of Māyā, in the drama of creation. In other words, the phenomenal world cannot exist apart from time and space, which are not mere negative concepts, but positive factors in creation. The Vēdānta conceives of creation, existence and dissolution; or rather of creation, as the intermediate state, between two un-manifest conditions. This makes time (or Kāla), an essential factor in cosmogony.

In the opinion of Sullivan, both time and space are essential for creation, in the same way as the Vēdānta postulates periodic, (i.e. time-controlled) creation and dissolution. Jeans thinks that

time could be equated with an act of creation, or "the materialisation of thought". Barnett feels that the Universe will ultimately suffer dissolution, and "time will come to an end, for entropy points the direction of time." Matter is felt to be space in another form, and since matter dissolves, space also must be finite and transitory, in the concept of time. Eddington, discussing the latter idea, seems to think that time is infinite, but this view is not shared by many; or perhaps Eddington is thinking of what the Hindus call *Mahā-Kāla*, or Super-Time, which is the sole attribute of God. Since the Universe must reach the stage known as thermo-dynamic equilibrium, it must suffer dissolution "or reach a state of death", as Eddington puts it. (In *Vēdānta*, this happens when the three *gunas* are in a state of perfect balance; the disturbance of this equipoise is the material origin of creation).

That space is definite in volume, is fundamental to modern astro-physics. As Sullivan observes, "The greatest change since the days of Copernicus, is the modern conception of the Universe as finite." The Euclidean geometry has ceased to hold sway, in a world governed by gravitational fields, and by the inherent curvature of all surfaces. (c/f "The departures from Euclid are due to the curvature of the Earth", Barnett). In Einstein's words, "Space-time bends back on itself in a great closed cosmic curve". Spatial Universe is finite and closed, and is therefore non-Euclidean, and is governed by Reiman's reconstructed geometry. This idea of space-time curvature fits in with the *Vēdāntic* cosmogony, wherein the Universe is conceived as a "*Brahmāṇḍa*", or the cosmic ovum. In Indian philosophy, a projectile moving indefinitely forward, in a straight line, will ultimately return to its base.

As Minkowski says, "Space and time separately have vanished into mere shadows: only a combination of the two preserves any reality." This, and similar views of Jeans and Whitehead, seem to conform to the *Vedantic* doctrine about space-time. Regarding inter-stellar space also, Eddington feels that it is not a mere void. "It is not a mere desert; there are vestiges of matter everywhere". Einstein thinks that the four dimensional space is as rigid as Newton's space. Empty space has been discarded.

totally by advocates of relativity and of quantum mechanics, and the conceptionists of curves and waves. To the modern Physicist, space and time are as objective as to the Vēdāntin, who conceives Māyā as the expression of space-time continuum. As Swāmi Mādhavathirtha says, "Time and space are both Māyā in modern physics, and in (our) philosophy. It was Sankara who first clearly identified time, space, and causation, with Māyā or the creative principle of God".

Hindu ideas of creation :

We have seen that in Vēdānta, all creation originates in space and finally dissolves into space. In the words of Vivēkānanda, "Everything we see around is ākāśa, the earth, sun, moon, stars everything is composed of ākāśa". As already explained, this ākāśa emanates from Māyā, under instruction from Iswara, but this space is not a mere container or envelope. It is the vehicle of creation. "All material elements have originated from space and exist in it" (Upanishad). Modern scientists also do not conceive of space as an inert passive entity, or a mere container. The discoveries of Faraday and Maxwell dispelled this idea long ago; space is as full of tension and force, as a magnetic field; inter-stellar space is congested with radiation and gravitational pulls. In the words of Eddington, "Space is as much a performer in the world of drama as matter". In Vēdānta, space is filled with a force called Prana, comparable to the radiant-energy, of Physics. Prāna is the second manifestation of Māyā, the second act in the play of creation. As Vivēkānanda said, "Prāna and ākāśa combine and recombine to form elements (i.e. matter)". Prāna leads to Vāyu or motion, and the latter results in Tējas or the hot gases and the nebulous masses of the Physicists. The next element in creation is Apsu, or the liquid-state, which is the result of the condensation of the hot gases. The last stage is the solidification of matter, in the shape of Prithvi, or the earth, leading to the evolution of life.

This conception of the Vēdāntins seems to tally with the theories of modern physicists. Fajan says, "Electricity is the primordial matter from which all elements and all material world are constructed." Eddington feels the necessity "for a state of

high organisation", prior to creation of matter and this can mean only an electro-magnetic field. Jeans puts it more graphically. "To the question, what is the ultimate substance of the Universe, it appears at last possible to give an answer, - electricity". To Hindus, this energy, or tension, or high organisation, is nothing but Sakti or the supreme power which emanates from Iswara and which is all pervasive and omnipotent.

We have seen that in the cosmic drama, Ākāśa first enters the stage and is followed by Vāyu, Tējas, Apsu, and Prithvi, in that order. Scientifically Vāyu represents the pre-nebular stage of the Universe. It is the loose cosmic matter dispersed everywhere and which is the parent of all visible and invisible substances. This idea is reflected by Eddington when he says, "The Cosmic matter extends everywhere; the recognisable nebulae are its condensations". Vāyu is mainly air, a mixture principally of oxygen and nitrogen; modern physicists have found that all cosmic clouds and inter-stellar nebulae are mainly these two gases. "So the source of the light that never was on sea or land is a familiar enough substance; it is oxygen-cum-nitrogen or if you like common air" (Eddington). The creation of heat or Tējas, from Vāyu is also a phenomenon consistent with modern science; while incandescent heat is generated, the whole world becomes a red-hot gaseous sphere. This is followed by the semi-solid or molten state of the globe, equivalent to the Apsu or water of the Vēdānta. According to the latter, the process of liquification is a process of cooling, since solidification must have an intermediate stage of liquidity. This accords with modern theory which postulates that a hot mass of gas cools down by a process of radiation and becomes liquid; this liquid then congeals into solid matter and this is the Prithvi of our philosophy. In the words of Gamow, "We must conclude that the solid crust of the Earth must have been formed from previously molten materials, about two million years ago".

Vēdānta and Quantum Mechanics.

Modern physics has robbed matter of all its respectable attributes; matter has been pushed into the border-land of shadowy symbolism. The hard, final and unbreakable atom, immutable

and fixed in size and weight, so dear to the 19th century physicists, has now ceased to exist. As Eddington puts it, "When we touch the last constituents of matter, it begins to fade away; one by one, the organs of sense lose contact with it". Science now says that the atom is composed of two electric charges in a state of balance; but between the proton and the electron there is blank space to the extent of 95% and the atom is not solid at all! In fact the atom is like a miniature universe, the electrons revolving round the protons, in mere emptiness. Matter is thus mostly empty space! More astonishingly, even the electrons and the protons are found to be not particles (or specks of matter) at all, *but just waves*. Material substance thus resolves itself into a mush of electricity. The Universe is not just the total objective entity it appears to be. "The highest edifices of physics have been purchased at the price of emptiness of content" says Einstein. Matter is almost a wave of energy and even man is just a charge of electricity. "What we have come down to, ultimately, is to form waves, waves, waves" (Eddington). "We live in an Universe of waves, nothing but waves" (Jeans.) Planck's theory had averred that radiation was as atomic as matter. Matter and radiation have thus become identical.

In the language of physics, radiation particles are called photons. Heisenberg's 'Theory of Indeterminacy,' (that man by his mere contact with the constituents of matter, through any given media, [light, electricity etc.,] disturbs the natural condition of those constituents), shows that even these quanta of energy, electrons for instance, can never be cognized in complete isolation. Mechanical instruments affect energy waves, even as the heat of a man's body does. "A particle may have position or it may have velocity but it cannot have both in an exact sense" (Eddington). Scientific effort thus becomes, at best, only an indication of probabilities and this limits the accuracy of modern theory. Further, the field of observation is eternally expanding and a theory is put out only to be soon discarded. As Barnett says, "There is no mystery of the physical world which does not point to a further mystery beyond".

To sum up our conclusions reached thus far: Science says that: (a) the atom is largely empty space (b) even the particles

are mostly electric charges (c) matter, radiation, and energy are all practically identical (d) all matter (and the Universe) is subject to decay, birth, and death; (e) we can never know fully the secrets of nature, because of our own interference with our observations.

Let us compare the Vēdāntin's views on these points:—

(a) Since all matter comes out of Akāsa, it is no wonder that the atom is practically empty space;

(b) the electric charges in an atom can be compared to the Prāna or vital force, in our philosophy ;

(c) According to the Vēdāntin, radiation is matter, though incorporeal (amūrtham). It is comparable to Ākāsa in this respect. The vibratory undulations (spandana) of Prāna or energy, are the sources of creation. The rise and ebb of this radiation or energy is the cause of material phenomena. This compares with Whitehead's view: "Suppose we keep to the physical idea of energy, then each primordial element will be an organised system of vibratory streaming of energy". The 'Quantum Theory' of Planck is essentially interpretable in terms of vibrations, according to Jeans. The Idealist philosophy of India would equate this energy with the activity of a conscious mind, viz., that of God. (In Sanskrit, 'jāgat' means 'to move' 'to vibrate').

(d) Matter, having a beginning, has an end. All elements are subject to decay. "Every atom is not only liable to spontaneous collapse, but collapse at frequent intervals; x x x we live in a decaying Universe" (Jeans). Vēdānta echoes these theories. Change and decay are inherent in the Universe. Yāska (10th century B. C.,) quotes Vārsyayāni (a still earlier sage), to the effect that all objects are subject to six criteria. viz., birth, existence, growth, modification, decay and death. The Gīta makes this explicit, when the Bhagavān tells Arjuna that birth and death are the inevitable lot of all created things, indeed of the whole Universe, including Īswara, the proximate creative agent of God or Paramātmā.

The Māyā Theory

That there is a wide divergence between appearance and reality, has long been recognised by European scientists, especially those of the Idealist school. As Eddington emphatically puts it, "In the world of Physics, we watch a shadow-graph performance of the drama of familiar life; the Absolute World is of so different a nature that the relative world with which we are acquainted seems almost like a dream". This view is concurred in by Jeans, Russell, Einstein and Planck. The concept of substance has vanished from science. Even electro-magnetism may not be real at all, in view of the theory of Indeterminism. Jeans portrays the world of reality as a stream, and the world of appearance as its rippling surface below which one cannot readily see. Eddington tersely says, "I assert that the nature of all reality is spiritual, not material". He copies the famous simile of Sankara and compares reality to the ocean and appearance to the waves which seem to dominate the deep. As Barnett picturesquely puts it, "To distinguish reality from appearance and to lay bare the fundamental structure of the Universe, science has to transcend the rabble of the senses."

These views of modern science seem to squarely fit in with the Vēdāntic concept of Māyā. The Upanishads maintain that all specific qualities, (form, lustre, sound, smell, taste etc.,) are simply the vagaries of Māyā and that things have no permanent attributes of their own. Only Brahman is real; the rest is evanescent, changeable and illusory. The whole Universe is a sort of magic show, put up by God out of his leela, to test the strength and intellect of the gifted seers, who alone can see the Reality below appearances. The phenomenal world is bound up by space-time and by causality; the phenomena are mere modifications of name and form, and projections of the one Reality, which is above time, space, and form. It is a mistake, however, to think that this Māyā-world is a complete illusion in the Berkeleyian sense, or in the manner fashionable with the Buddhists. The Vēdānta realises that the phenomenal world does exist, but that it is different from the Reality behind it. 'Mithyā' or Illusion, in Vēdānta, means only the inexpressibility of nature, and not its total unreality.

Indian Transcendentalism and Science.

So far I have tried to depict the parallel strains of Indian philosophy and of the modern theories of scientific thinkers, within the field of practical interpretation. There are, however, other areas of speculation which transcend the observations of pure science, in which also some similarity of views can be perceived between Vēdānta and present-day physics.

(a) Creation.

Vēdānta strongly believes in a First Cause (or the Creator,) called Brahman or Paramātmā. To Indian philosophy, this systematic, and ordered world cannot function without a conscious principle, and an agent of that principle. Inert matter or dead atom cannot originate the living world, nor can mere accident be the cause of creation. The Universe is the work of Brahman, acting through Isvara or the creative agent. (We have a similar concept in Christian theology). Isvara is thus both the efficient and the material cause (of the Universe), the latter being his Sakti or Māyā. Turning to the 'Idealist' physicists, we find that they also believe in a Creator; (Eddington's Mind Stuff, Jean's Thinker, Einstein's First Cause, Whitehead's Conscious Principle, etc.) It is true that the scientists of the 'Realist' school have no specific need for a First Cause; and naturally, the hard 'Materialistic' school (in Russia and elsewhere), will abjure God as a scientific heresy.

(b) Determinism Vs. Indeterminism.

Vēdānta believes in close causal connections. Something cannot come out of nothing, and material cause and its effect cannot be separated. Further, the effect is something already existing in the cause. ("A mud pot can only be made from clay; oil cannot be expressed from sand").* In fact, the effect exists, *in potentia*, in the cause. (Modern physics concedes that like-cause produces like-effect). This causal nexus means, to the Vēdāntin, that the entire working of the world is regulated by a conscious principle, by a divine monitor, who is the First Cause. This Creator is the guiding agent, moving the world in an ordered pattern, according to the inexorable laws of Karma. An all-seeing Director is the core of Vēdāntic reasoning. Modern

* Upanishad; in Saudi Arabia, however, "oil is expressed from sand"!

philosophical thought in the West (of Kant, Hume, Hegel, Mill, Schopenhauer, etc.) supports Vēdānta, on this point. As regards the physicists, the Idealist school (e. g. Jeans, Sullivan, White-head, Einstein, Black) is strongly deterministic, but it must be admitted that the opposite school does not lack distinguished and vocal advocates and their ranks are apparently swelling, thanks to the spread of Marxism. Even Indeterminism can draw some support from Vēdānta; the doctrine of the Supreme Cause and the phenomenal effect presumes that every effect is a cause, and every cause an effect, in its turn. "The effect is nothing but a cause in another form" says Vivēkānanda. But the entire cause-effect chain is the creation of the Supreme Cause or God, to the Vēdāntin; to the Materialist* it is the result of accident, or 'automatic urges'.

(c) *The Doctrine of Eternal Recurrence :*

Vēdānta has the mystical, but fundamental, conception that in nature everything recurs. In other words, creation and dissolution follow each other, to endless eternity. As the Bhagavān says in the Gītā, "The entire Universe is created again and again and dissolved again and again". In the words of Sankara, "the process of dissolution is as systematic as that of creation"; a Kalpa marks the time-limit of this transformation, which repeats itself *ad infinitum*. Thus an eternal law of recurrence is the sheet anchor of Vēdāntic thought; it is the Sakti which keeps up the momentum of continuity. (The familiar simile of the tree and the seed is oft cited in this context).

Present-day physics finds that the sum total of energy is never destroyed or re-created; the grand pool remains constant and is always conserved, as first propounded by Mayer and Joule in the 19th century. As Jeans says, "Energy, like mass, is constant; their total amount never changes"; but this does not mean that the Universe is not fading out. The Universe is decaying in the sense that the total energy becomes less and less available. The stars, for instance, either blow up or become

† The technical definition of Communism is, "Dialectical Materialism."

cold, their energy getting dissipated, "till they fade away into darkness" (Jeans). Sullivan also feels that the Universal energy is getting "more and more disorganised and cannot live through endless eternity". The modern physicists also believe that the thermo-dynamic law and entropy are in operation on a Cosmic scale. This ultimate state of complete dissolution (or thermo-dynamic equilibrium) cannot last for ever and creation must start afresh from a physicist's point of view. Thus creation and dissolution, (Sakti/Māyā and Pralaya) are common to both Science and Vēdānta. The Upanishadic hypothesis, that decentralised energy will, in due course, achieve concentration again, seems to be in conformity with modern scientific thinking. But to the Indian mind, unintelligent energy can never organise itself and this postulates an intelligent agent, who can be only Brahman, or God.

SANKHYA AND SCIENCE

As mentioned elsewhere, it is to the credit of the ancient Aryans to have indulged in daring and highly intuitive speculations about cosmogony, often with some pretension to scientific clarity and precision. The Sāṅkhya theories of creation, which are supported by the Yogic school of Patanjali, have all the characteristics of a scientific hypothesis. These theories hinge on the principles of conservation, transformation and dissipation of energy, and clear-cut conceptions of space and time. According to the Sāṅkhya school, (perhaps the most ancient of the six conventional Darsanas),† the Universe is evolved out of unmanifested Cosmic nature, called Prakṛiti, defined as ubiquitous, indestructible, eternal etc., and conceived as made up of three kinds of infinitesimal "reals" or "gunas," representing substantive entities; (sathva, rajas, tamas or intelligence, energy, and inertia). The three 'gunas' normally remain in a state of equilibrium (or uniform diffusion) in the infinite continuum or Prakṛiti. "Sāṅkhya attributes the character of both quantum (paricchinnatva), and continuity (parimāna), to both energy-stuff and matter-stuff. This bears resemblance to our modern conception of energy and matter" says a leading writer* on Indian Science.

* Dr. P. C. Ray.

† and eulogized in the Gita.

In a state of perfect equilibrium (of the three gunas), Cosmic evolution would be under arrest. When the equilibrium is disturbed, evolution commences through a transcendental agitation exerted on the slumbering Prakriti, by Purusha, (the Absolute or the Universal Soul), which itself is incapable of modification or phenomenal activity. The disturbance of the 'reals' results in an unequal aggregation of the gunas, leading to motion and creation (*parispanda*). This evolution is not the emergence of new matter but merely a process of differentiation in the integrated whole and proceeds on the basis of a definite law, which cannot be transgressed. Cosmic evolution is, therefore, a two-fold process, creative as well as destructive. The creation of organic and inorganic matter results from dis-equilibrium as indicated *supra*, but there is all the time a tendency towards the restoration of the equilibrium of Prakriti (in a sort of dissipation of energy-cum-mass). The totality of the gunas in the Universe remains constant always, taking both the manifested and unmanifested quantities together. This implies the conservation of matter and energy, as much as their transformation. "The conservation of space and time and the idea of causality as elaborated in the Sāṅkhya, are of a surprisingly advanced character", to quote Dr. P. C. Ray.

Kapila* (7th century B.C.?), the leading writer on the Sāṅkhya, had some idea of Ultimate Particles (on lines similar to the concept of *Paramānu* of Kānada). According to him, there are five infra-atomic particles named *tan-mātrās*, imperceptible to human senses, and derived from 'bhūtādi', or the super-subtle matter-rudiment. The *tan-mātrās* give rise to the five gross elements (or *bhūtas* i.e., sky, air, fire, water and earth). These elements are, however, only abstract principles or classifications, and are not to be confounded with their material counterparts. The differences in these gross-elements are due to differences in the grouping of *tan-mātrās* in their sub-atomic structure.

* Who appears as a very ancient sage even in the old Hindu sacred books (e.g. the Gita). He is also referred to in the Buddhist canonical texts of the pre-Christian era.

The principal contribution of Sāṅkhya to Science is the concept of a theory of evolution, which anticipates Darwin and Wallace by 25 centuries. The Sāṅkhya gave the clue to the origin of the species, in the life of both the vegetable and the animal kingdoms. In the animal kingdom, the process of evolution, as depicted by Kapila and his followers, is surprisingly modern. Out of the amorphous watery mass of the primordial world, came amoeba, insects and worms. From these developed fish and other aquatic beings. Evolution then advanced towards the winged creatures and the primitive mammals. The latter then developed into the well-known quadrupeds, from which emerged the anthropoids, and finally, man. An elaborate genealogical tree was conceived of, in a manner approximating to that fore-shadowed by modern biology.*

TANTRA AND ALCHEMY

It is to the dubious credit of India to have launched the world on the search for the elixir of life and the philosophers' stone. Tantrism was the high-priest of the cult of perpetual youth and the transmutation of metals. It is true that the Tantra school aimed at higher things than these (which were merely considered to be the means to a satisfactory life), but in actual practice, less noble ends were often substituted for the true philosophic goal, which was to gain beatific experience of the Divine, in human life. As Zimmer would have it, medicine and alchemy were considered to be "the pre-requisites of the everlasting quest, along the paths of pious exercise and austere discipline, to win for man a divine freedom beyond all the needs and bonds of human nature".

The Tantric cult came into vogue with the decline of Buddhism, circa 500 A.D. Tantra has borrowed heavily from the Atharvan, which deals, incidentally, with magic, witchcraft, spells,

* The legend of the 10 Avatars of Vishnu is correlated, by some thinkers, to the evolution of man; the fish (Matsya), the saurian (Kurma), the boar (Varaha), the sabre-tooth tiger (Narasimha), the pigmy man (Vamana), the rude warrior (Parasurama), the model prince (Sri Rama), the sophisticated monarch (Krishna), the popular evangelist (Buddha), and finally, the destroyer of the future, (Kalki) who ends the Kali age.

and charms and amulets having an alchemic base. Tantra treatises go back to the 5th century; a MS. called *Kubji-ka Tantra* and written in the Gupta Sanskrit of the 5th century A.D. has been discovered in Nepal. In this book, Siva speaks highly of mercury (*parada*) as his seed, and refers to the artificial making of gold. Both the Hindus and the Buddhists became addicts to Tantra, which offered a seemingly easy way of liberation even in this life, through certain recondite mysteries and rituals. Since the aspirant to this liberation must maintain his body well, the preservation of the latter, through esoteric exercises and refined medicaments, became necessary. In such medication, *rasa* or mercury (the seed of *Sīva*), became the principal ingredient, the next best being mica, (identified as the seed of *Gauri* or *Durgā*). The *Rasaratnākara* of *Nāgārjuna* (circa 1st century B.C./A.D.) and the *Yōgāchāra Sāstra* (400 A.D.), the *Rasahridaya* and the *Rasārnava* of later dates, became the standard texts for the Tantric schools, which bred *Rasa-siddhas* or magicians and alchemists, (who even claimed to be able to get new bodies without quitting the old one). According to the *Rasārnava* (12th century A.D.), mercury can not only transmute metals, but make the physical body imperishable. This theological work incidentally throws a flood of light on the knowledge of chemistry on the part of Indians, about 1000 A.D. *Al Beruni* refers to these works and indicates that the knowledge of the Hindus travelled west, via.. Persia and Arabia, to Europe, where alchemy became the secret rage of all the physicians and the surgeons, in favour with the rich.

To quote the learned historian, Kern :

“The development of Tantrism is a feature that Buddhism and Hinduism in their later phases have in common. The object of Hindu Tantrism is the acquisition of wealth, mundane enjoyments, rewards for moral actions, deliverance by worshipping *Durgā*—the *Sakti* of *Siva-Prajñā* in the terminology of the *Mahāyāna*—through means of spells, muttered prayers, *samādhi* (suspension of all outward consciousness), offerings, etc. Similarly the Buddhistic Tantras purpose to teach the adepts how, in a supernatural way, to acquire desired objects either of a material nature such as the elixir of longevity, invulnerability, invisibility and alchemy, or of a more spiritual character, as the power of

evoking a Buddha or a Bodhisattva to solve a doubt or the power of achieving in this life the union with some Divinity."

During the reign of the Pāla dynasty, there were many masters of magic (Mantra Vajrāchāryas) who, being possessed of various siddhis, performed the most prodigious feats. The kings of the Pāla dynasty, whose sway over Gauda and the adjacent regions lasted from about A.D. 800 to 1050, are known, both from their annals and inscriptions, as protectors of this Faith. It was during that period that the monastery of Vikramsīlā became a renowned centre of Tantric learning.

The Sena kings, who followed the Pālas in the dominion over Eastern India, though belonging to the Hindu persuasion, were not hostile to the Faith. Still Buddhism declined during their reign, and more so after the invasion of the country by the Mohammedans, in A.D. 1200. The monasteries of Udandapura and Vikramsīlā were destroyed; the monks were killed, or they fled to other countries. The learned Sākyasī went to Orissa and afterwards to Tibet; Ratnarakshita to Nepal; Buddhāmītra and others sought refuge in South India, whilst Sangama-Srijnana, with several of his followers, betook himself to Burma, Kāmbōja, etc., "And thus the law of Buddha became extinct in Magadha".*

Tantra found a congenial home even in far off China. Amōgha Varsha (a convert to the Sugatha religion and a Tantric expert) resided at the Chinese Court in 750 A.D. and gave a great vogue to magic and supernaturalism in the Celestial Empire. Marco Polo (in 1275 A.D.) found the Buddhist Tantrics so powerful at Court that all his attempts to convert Kublai Khan to Christianity miserably failed. To mention a famous episode, set down in all seriousness by the Venetian,** the Great Khan, who was setting out for a hunt, asked Marco if he could provide him with a specially cool weather in the areas of the hunt. The Italian, of course, pleaded inability to oblige, whereupon the Khan requisitioned the services of his Chief Priest (a

* A comparison of the fleeing monks of Udandapura and Vikramsīlā, with the exodus of priests and scholars from Constantinople in 1453 (when the city was captured by the Turks), rises immediately to mind.

** Vide his 'Travels'.

Tantrist from Nepal) who promptly arranged to have a light shower and nice cool winds over the whole District!

It is a curious fact that extreme Tantrism flourished most in the outer purlieus of Brahminism and never in the heart-land where the Hindu faith was strong. For instance, the esoteric *Rasa-hridaya*, already referred to, was composed by Govinda Bhagvat (1100 A.D.) for the Rajah of Kirāta-land i.e., Bhutan. Tibet has also remained the home of the Tantra, *par excellence*.

All the Tantric books dealing with alchemy show full acquaintance with the various processes connected with metallurgy. The Tibetan texts (the famous Tanjur), contain several volumes dealing mainly with medicine and alchemy, especially relating to quick-silver, which was believed to have the power to transmute base metals into gold. Even South India did not remain unaffected. The Siddha school of medicine, tracing its ancestry to the legendary Agastya, owes its basis to Tantrism of the extreme Saivite form. The works of these 'Sittars' (Sanskrit-Siddhas) in easy but not too grammatical Tamil verse,* deal with alchemy, medicine and yoga, and give many recipes for minerals, metals, and salts. As expected, the science is always inter-twined with magic. Agastya, the alleged founder of the Tamil Siddha school, belongs probably to the 7th or 6th century B.C.; ** but the date of 'Bogar', another famous Siddha author, is uncertain. He is reputed to have been a Chinese who came to India in the 3rd century A.D., to study medicine and alchemy and was accompanied by another Chinaman named Pulipani, in whose name many Tamil Siddha works are even now extant. These two are said to have taken with them to China many South Indian disciples for permanent residence in China. The descendants of these were, doubtless found by Marco Polo at the court of the Great Khan, as mentioned earlier.

Enough material has been given above, to show the indigenous and independent growth of alchemy in India from very remote times and its spread to far off countries. "The question of Indian alchemy deriving its origin from that of the Greeks or the Arabs

* often capable of two or three meanings.

** It is doubtful if he is the Agastya mentioned in the Sangam literature, who is probably of an earlier date.

does not, therefore, arise at all" says Dr. P. C. Ray. If anything the spells and incantations, coupled with chemical and other formulae, must have travelled from India to Greece, which subsequently passed them on to the Arabs. The Arabs were the further channel of propagation of alchemy to Europe. During the Crusades, there was much inter-mingling of the Christian and the Moslem sometimes involuntarily. Many Christians learnt Arabic as a pious exercise in the liberation of the Holy Land; more of them spent parts of their life as prisoners of the Sultan, during which period they learnt of the sciences and mysteries of the heathen. The Crusaders, later on, purveyed through the many lands from which they came, their acquired knowledge.

*Music and Allied Arts:**

The ancient treatises on music reveal that musical notes and intervals were analysed and mathematically calculated and that the so-called "Pythagorean Law" was formulated, (long before the time of Pythagoras) by which the number of vibrations and consequently, the pitch of the note, was conceived as varying inversely with the length of the string between the points of attachment and touch. The octave was divided into 22 srutis, (or quarter-tones) and their proportions had been measured with great accuracy, by the 1st century A.D. It was recognised that differences of timbre were attributable to over-tones (anuranasa), which varied with instruments.

In ancient sculptures (e.g. at Barhut and Sanchi), the musical and allied arts (like dancing), are vividly portrayed in profusion. The Arthasāstra treats, in detail but without much enthusiasm, of these arts and in the Jātaka tales, music and dancing form the chief items of social amusement. Pānini shows deep acquaintance with these fine arts; besides enumerating vocalists and instru-

‡ The Rig Veda mentions the seven swaras or musical notes. The following musical instruments are referred to in Vedic literature: Aghati (cymbal), Adambara (drum), Karkari (lute), Kandavina (lute), Gargara, (?) Godha, (?) Talava, Tunava (flute), Dundhubi (drum), Nadi (reed flute), Bhumidundubhi (earth drum), Lambara (drum), Vanaspati (drum), Vana (harp), Vani (lyre), Vadana (plectrum).

mentalists, he refers to orchestral bands, including the vīna players. In Pāṇini's time, music was regarded as a *śilpā* (fine art) and under its broad definition were included *nritya* (dance), *gīta* (song), *vādītra* (instrumental music), and *nāṭya* (stage acting). Kautilya follows this definition and refers incidentally to an ancient work called *Nāṭya-sūtra*, apparently a manual on stage-craft, now lost. To Pāṇini, the orchestra was known as *turya*, and the artists were grouped in twos ; (e.g., the players on the *mridanga* and the *panava* formed a group of percussion instrumentalists.) The lute, the flute, the vīna etc., were the popular musical instruments. Apparently operas were also staged in Pāṇini's time for royal entertainment, in which both dancers and musicians took part. Mention is also made of the player on the earthen jar, called *dardūrikā*; (he would correspond to the present performer on the "ghatam").

Dresses, Ornaments etc.

I may perhaps end this chapter with a brief description of the dress, ornamentation etc., of the ancient Hindus.

The Vedas give no details of the dress worn by the Aryan peoples, except incidentally. Upper and lower garments are mentioned and the reference to needles and stitching indicates that 'made' dresses were often worn. Probably, the common people (males) used a *dhōṭi*, ready from the loom, and worn round the waist by twisting, with the ends taken round and between the legs and tucked in at the waist ; "A form of dress" says Meadows-Taylor "than which anything more convenient to walk, to sit, or to lie in would be impossible to invent". For *ācchādana* or upper cover, a smaller garment was worn, thrown like a scarf over the body, with the ends loose and flying, and the right shoulder bare, according to orthodox practice. It was enjoined on the Aryans, by the *Sāstras*, that they should leave the right arm and shoulder free of clothing, when meeting elders, in religious assemblies, or on ceremonial occasions. (The terra-cotta figure of the bearded Mohenjodaro Yajamāna, with his trefoil *lohi*, a fillet on his head, and his right shoulder bare, is typical of Aryan practice). The upper castes probably wore three garments ; an under-garment (*nivi*) an over-garment or mantle (*adhivāsa*) and a turban whose ends were taken first to the back and then tucked

away in front.* As for the ladies, the famous marriage hymn of the Rig Veda ** mentions the *asāsana*, the *visāsana* and the *adhivikartana*. In the absence of details, we have to surmise that these represented the full length divided skirt, (pyjamas), the bodice-piece, and the veil-like scarf thrown round the head and the body, in the same fashion as is now prevalent in Upper India, in conservative circles. (The females wore, in addition, intimate nether garments (or slips), held in place by a thick waist-thread; perhaps the equivalent of the modern girdle) †

The richer classes, especially the *Rājanyas*, (who were no doubt accustomed to wear armour, some-times plated with gold) used 'made' dresses of rich varieties. '*Vāsas*' is the word oftenest used in the Vedas for clothing and *Pūshan* was named the guardian deity of the weavers (*vāsarēya*). Clothes were made of sheep's wool, (*aurṇa*), often richly embroidered; (an art for which Kulu and Kashmir are even now famed all over the world); and the *Maruts* are spoken of as wearing garments embroidered with gold. As per the Vedic Index, to be an *avāsōda* (giver of garments), was to be one presenting costly shawls and mantles ornamented with lace, to the deserving. Expressions like '*suvasana*' and '*surabhi*' implied that some sort of tailoring or form-fitting was in vogue, at least in high circles. The *Satapata Brāhmaṇa* requires the *yajamāna* to wear a sacrificial mantle (*atka* or *drapi*), a silken undergarment (*tarpya*) a garment of undyed wool over the body and finally, a turban. Something similar was prescribed for the *yajamāna*'s wife also, not excluding the turban! It should be noted, as Macdonnell observes, that the Vedic tradition required that all people (whatever their rank) should wear clothes of some sort and decency, the only exception being in the case of *avadūta sanyasins* or *munisvaras*. ‡ What a contrast to the early Europeans,

* The standard equipment of a '*snataka*' (boy-initiate) was a pair of garments, a turban, ear-rings, a bamboo staff, shoes and an umbrella.

** Rig Veda X 85 — Wilson translates '*adhivikartana*' as 'divided skirt'.

† The *Satapata Brāhmaṇa* mentions an undergarment called *chandataka*; it is the modern *chaddi*.

‡ The Rig Veda calls these nude ascetics '*vata-vasana*' or 'wind-girt'.

particularly the Greeks, who never felt diffidence in going about completely naked, (whether male or female) and who would even exercise or join in games and competitions totally in the nude! In the Olympic games both sexes strove for the trophies in a state of nature. Married women were not allowed to join even as spectators, to prevent their making disappointing and disparaging comparisons of their own husbands, with the male contestants! (A married woman discovered among the spectators was liable to death.) No wonder that even Greek gods and goddesses are always sculptured in *puris naturalibus*; it was the prudery of the Romans which added a mantle or at least a fig leaf (the counter-part of our familiar pipal leaf) to these Greek statues, after Hellas was overrun by the Italians; (e.g., the loose drapery on Venus de Milo was put on by a Roman general, about 300 years after the statue was made).*

Weaving was well-known in Vedic times; the warp, the woof and the shuttle are all mentioned. Technical words like tantu (warp) and otu (woof) are found in the Rig Veda. The shuttle and the loom are mentioned in the Yajus Samhitā. The Greek writers mention "silk and wollen cloth worked in gold and ornamented with precious stones". In Pānini's time, clothes made of silk (kausēya), wool (aurna), linen (aumaka), and cotton (karpasa)** were freely worn. It would appear from Pānini's descriptions that ordinary people in his time wore two *satakas* or pieces of cloth one for the lower body and one for the upper. The Greeks of Alexander's army were much impressed by the simplicity and elegance of Indian dress. Arrian observes thus; "The dress worn by the Indians is made of cotton; they wear an undergarment of cotton which reaches below the knee half-way down to the ankles; also an upper garment which they throw partly over their shoulder and partly twist in folds round their head." Pānini

* Indian Sastras (e.g. Manu's) absolutely prohibited sleeping, bathing, etc., in the nude, even in privacy.

** Indian cloth has been found in countries like Sumeria and Egypt. Skt. Karpasa became carpus in Hebrew, karpasa in Greek, and carbasus in Latin. That it is native to India, is now freely admitted; from India, it travelled all over the Pacific, and into the New World.

mentions the under-garment as āprapādīnā (i.e., reaching to the ankles) which was tied to the waist by a girdle (as evidenced by the numerous statues of the Mauryan period). The price of each sataka (or dhoti, to use a more modern word) was one silver kārshāpana in Pānini's time.

It is a mistake to suppose that the ancient Aryans did not know tailoring. The wearing of a tunic or a loose-gown seems to have become very common by the 6th century B.C. Buddha is occasionally portrayed as wearing such a gown; (more often, he is draped in loose cloth, worn in plaids). Pānini mentions a *brihatya-ācchadana*, which was also known as pravara, a big all-covering mantle measuring about 24 feet x 12 feet. (c/f. the Roman toga). He also enumerates various kinds of blankets worn over the tunic, particularly the 'pāndu-kambala', brightly dyed and embellished with zigzag designs. The Mauryan sculptures make it clear that a loose gown hanging down to the leg was a favourite costume with all classes of people. The Amaravati sculptures also show good evidence of the tailor's art. Ancient Sanskrit literature contains terms for embroidery, darning (tunna vāya) and tailoring (sūchikā)*. In fact there was a separate sub-caste of tailors known as sauchika, and their incidence must have been wide-spread. The names of various dresses also indicate the existence of this profession all over the Aryan land. Kanchuka was a waist-coat or a male dress shaped like a bodice, sometimes going below the waist to the knee. The sages who attended Yudhishtira's coronation are mentioned as wearing turbans and kanchukas. The ordinary term for eunuch-guards was kanchukīnā i.e., wearers of gowns, (as distinguished from those wearing belts and armour). The feminine or diminutive form of kanchuka was kanchulikā, i.e., a cloth inner bodice for ladies (the modern kanchūli or chōli), over which was worn a short jacket with half-sleeves (called angikā), often shining with bright borders and golden lace work.

* The following items of male dress are mentioned in Vedic literature: Atka (mantle), Upanah (sandal), Uśisa (turban), Tarpya (silk garment), Drapi (mantle), Nivi (undergarment), Paridhana (garment), Pandva (un-coloured garment), Pesas (embroidered garment), Vatapana (wind guard), Samula (woollen shirt).

The word *nivi* (referred to elsewhere) is strictly applicable to the tape with which drawers or skirts were tied at the waist, especially by the ladies, (the modern newar). It would appear from the old statuary that males, (particularly professional people) wore trousers or pyjamas, which were close fitting and tied in above the ankle. Below the pyjamas, people ordinarily wore ankle-boots. In the sculptures, this leg-wear does not show any heels; that these boots or buskins were genuine articles of Hindu dress, and not borrowed from foreigners, is evident from their mention in very ancient literature. Pānini lists several types of foot-wear all of which reached up to the ankle; and he calls them *anupādina*, remarking that the name was very ancient even in his day. Amarasimha defines *anupādina* as a kind of shoe that covered the whole foot, and was in fact an ankle boot. We have seen elsewhere, that certain tribes living in the far north on the fringes of Aryan society were accustomed to wear sandals which had upturned soles in front and which were strapped below the ankle; (the ancestor of the famous Pathan slipper).*

A word about ornaments; all our records, literary and archaeological, evidence the strong love of the Aryans for personal ornamentation, from the very earliest times. There was inordinate fondness for gold jewellery, worn practically all over the body, by both sexes.† In the Vedas, the gods always appear heavily be-jewelled. Rudra is spoken of as "shining with brilliant gold ornaments and wearing an adorable necklace." The Maruts are also addicted to similar adornment, "with shining necklaces pendent on their breasts". The Aswins are invariably resplendent with golden trimmings on their persons and on their mounts. The leading Asuras vie with the Dēvas in this respect; nay, they even excel them, by and large, as their material substance was usually larger than those of their semi-divine opponents in the Purāṇic times! This anthropomorphism is but a reflection of the personal traits of the Vedic Aryans; they clothed their gods with those very things which the mortals desired most.

* Arrian says: "The Indians wear shoes of white leather elaborately trimmed, while the soles are variegated".

† According to Roscol and Schorlemmer, the ancient Hindus were the first to discover gold. This opinion is supported by Prof. Ball. The Hindus were using diamonds, thousands of years before the Europeans.

We find even sages hankering after gold : Kakshivant wants a son "decorated with golden earrings and jewelled necklace". Priests always expected remuneration in gold pieces, (in addition to, of course, horses and cows!). In many sacrifices, the Yajamāna transferred his personal jewellery to the Hotā and his associates. To mention an instance, in the Rājasūya sacrifice the king must donate to the chief priest, besides literally thousands of cows, cushions in-laid with gold, golden earrings, a gold necklace, etc.*

In Yāska's Nirukta, various kinds of ornaments are enumerated. The Dharmasastras (particularly Manu's) define the status and the duties of the jewellers and the gold-smiths, taking care to stress the punishments for fraud, delays, etc. The ornaments mentioned by Pānini are ear-rings, frontlets (lalātikā or pendant, worn now-a-days by brides on the hair and hanging over the fore-head), finger and toe rings, belts, necklaces (graiveaka), arm-bands, and various types of head adornments. The village gold-smith (suvarnakāra) was expected to make new ornaments from ingots, remake completely old ones, or merely refurbish used jewels ; and formulae were laid down (e.g., in the Arthasāstra) for the various maxima margins of gold which should be allowed to the goldsmith, as "loss" in the various operations. Pānini mentions the skilled gold-tester (kussala) using a touchstone for the purpose.†

* The Rig Veda mentions women trooping to festal assemblies, "well-decked and shining forth with sun-beams (on their jewellery)." Manu enjoins on men the need for endowing the women-folk with good clothes and ornaments. "An un-adorned bride robs the world of its charms," says Manu. An Atharvan hymn suggests that the oysters gather the pearl seeds from lightning playing on the ocean beds. [This legend travelled to the West in due time and Strabo avers that pearl is formed by dew drops falling into the oyster shells]. From very remote times gold and silver had been pouring into Aryavārtha ; so much so, that Pliny called India, "a sink of precious metals". But this import of specie was by way of fair trade, and not murder, cheating, and rapine, as was the case with the Europe of the 16th and 17th century filibusterers. The precious metals, moreover, promptly went into ornaments, artistic goods, and even hoards, with the result that prices rarely rose substantially in India. Europe on the other hand suffered a currency inflation following the looting of the Americas, and the plunder of the East.

† The Greek writers are full of praise for the Indian metal workers. They refer to highly ornate jewellery set with gems, and to vessels of gold such as large basins and "goblets six feet in breadth."

Hair dressing was a skilled art. Since males frequently wore their hair long, it had to be kept in place by fillets of gold or silver. The coiffure of the ladies was often elaborate and showed astonishing variety and artistic appeal. Specialists were employed for the purpose in princely households and our old sculptures and paintings show the marvellous results often achieved by them. Aids to beauty were often in requisition; Pānini refers to flat and curved mirrors, made of polished metal; (copper in his time;† subsequently tin and lead solutions were put on the metal to heighten the reflection). Many kinds of unguent (*anjāna*) were used in profusion. That from the Trikūta mountains (the present Sulaiman Hills in Afghanistan) was particularly praised, as also was the Yamunā *anjana* from the Hastinapura area. Among the beauty-culturists, Pānini mentions the hair dresser (*snapakā*), the masseur (*utyadaka*), the perfumer (*udrartaka*) and the scent sprinkler (*praisechaka*)* Females were employed (as in modern Japan) for applying perfumes and paste to the male body after bath, and to apply scented oil etc. to the hair and to the person. Kautilya would like the king to place himself in the hands of his female attendants soon after his bath, for this purpose. (We have already seen that the personal palace guard of the Mauryan king was of the Amazonian type). Perfumes of various kinds were employed to render the person attractive. Pānini mentions several varieties, of which *naladha* (*spikenard*) was the most popular: Pliny calls it *spica* and says that 'both the leaves and the *spica* are of high value and their odour is the prime of all unguents, the price being 100 *dinarii* per pound'. It may be recalled that in the wall-paintings of the Ophir voyage by Queen Hatshepsut of Egypt (1800 B.C.), the workmen are pictured as carrying small *naladha* plants in baskets, to the Egyptian boats from the Indian shore,

† The art of making copper mirrors has not died out in India. One can still see splendid specimens of such mirrors in princely houses (e.g. in Travancore). By Kautilya's time glass making had become common.

* Even a religious student had to provide himself with *anjana* (*collyrium*), oils for the body, *sthaḡara* or a toilet powder, and ground sandal-wood for the body, before he could settle down as a house-holder. The Buddha, according to the Jataka Tales, allowed his monks "the use of the razors, of a stone for sharpening them, of powder prepared with *Sipatika* gum to prevent them from rusting, of a sheath to hold them and all other apparatuses of a barber."

presumably with a view to having them planted in Egypt. Frankincense was used in daily worship, along with the sandal and the aloe. "Heerer thought that frankincense was got from Arabia but Colebrooke has shown that the resinous gum called the olibanum (the frankincense of the ancients) is an indigenous product." (Buch : Economic Life in Ancient India, II 183). Sandalwood was imported into north India from Malabar, in pre-historic times.

*Important Works in Sanskrit containing
arithmetical data.*

No.	Author and work	Date as per Datta and Singh	My suggested date
1.	Various Rishis : <i>Rig Veda etc.</i>	3000 B.C.	5000-3000 B.C.
2.	Do. <i>The Brāhmanas</i>	2000 B.C.	2500 B.C.
3.	Manu : <i>Mānava Sulbha Sūtra</i>	—	1000 B.C.
4.	Baudhāyana : <i>Sulbha Sūtra</i>	800 B.C.	800 B.C.
5.	Āpastamaba : <i>Sulbha Sūtra</i>	400 B.C.	600 B.C.
6.	Kātyāyana : <i>Sulbha Sūtra</i>	400 B.C.	500 B.C.
7.	— <i>Bakshali M. S.</i>	200 A.D.	—
8.	— <i>Surya Siddhānta</i>	300 A.D.	500 B.C.*
9.	Āryabhatta I. <i>Ashta-Sata</i>	499 A.D.	
	” <i>Dasa-Gitikā</i>		
10.	Āryabhatta II <i>Mahā Siddhānta</i>	950 A.D.	—
11.	Varāhamihira : <i>Brihat Jātaka</i>	500 A.D.	—
	” ” <i>Samhitā</i>	”	—
	” <i>Pancha Siddhānta</i>	”	—

* Colebrooke says, "A work bearing this title may have existed earlier than the age which is usually assigned to the Surya Siddhanta. Varahamihira frequently cites this work, as an ancient one".

No.	Author and work	Date as per Datta and Singh	My suggested date
12.	Bhāskara I. <i>Laghu Bhāskariya</i>	522 A.D.	—
	„ <i>Mahā Bhāskariya</i>		—
13.	Lalla : <i>Sisyā di Vriiddhida</i>	598 A.D.	—
14.	Brahma gupta : <i>Khavida-Khadyaka</i>	628 A.D.	—
15.	Manjula : <i>Laghu Mānasa</i>	?	?
16.	Sridhara : <i>Trisatika</i>	750 A.D.	—
17.	Mahāvira : <i>Ganita-sarā</i> <i>Sangraha</i>	850 A.D.	
18.	Sripathi : <i>Siddhānta Sēkhara</i>	1039 A.D.	—
19.	Bhāskara II : <i>Bijaganita</i>	1150 A.D.	
	„ <i>Lilāvati</i>	„	
	„ <i>Siddhanta Siromani</i>	„	—

NOTE I TO CHAPTER X

Referring to the Indo-Aryan numerical system, the authors of the Vedic Index, (who are not over-generous in their estimate of Indian achievements), have the following comments to make :

“Dasam, (ten) forms the basis of the numerical system of the Vedic Indians, as it does of the Aryan people generally. But it is characteristic of India that there should be found, at a very early period, long series of names for very high numerals, whereas the Aryan* knowledge did not go beyond 1,000. In the Vājasanēyi Samhitā, the list is 1 ; 10 ; 100 ; 1000 ; 10,000 (ayuta) ; 100,000 (niyuta) ; 1,000,000 (prayuta) ; 10,000,000 (arbuda) ; 100,000,000 (nyarbuda) ; 1,000,000,000 (samudra) ; 10,000,000,000 (madhya) ; 100,000,000,000 (anta) ; 1,000,000,000,000 (parārdha). In the Kathaka Samhitā, the list is the same, but niyuta and prayuta exchange places, and after nyarbuda, a new figure (badva) intervenes, thus increasing samudra to 10,000,000,000, and so on. The Taittiriya Samhitā has, in two places, exactly the same list as the Vājasanēyi Samhitā. The Maitrāyaṇi Samhitā has the list ayuta, prayuta, then ayuta again, arbuda, nyarbuda, samudra, madhya, anta, parārdha. The Pancavimsa Brahmana has the Vājasanēyi list up to nyarbuda inclusive; then follow nikharvaka, badva, aksita, and (apparently) ‘go’ = 1,000,000,000,000. The Jaiminiya Upanishad Brahmana list replaces nikharvaka by nikharva; badva by padma; and ends with āksitir vyomāntah. The Sāṅkhāyana Srauta Sūtra continues the series after nyarbuda with nikharvada, samudra, salila, antya, and ananta, (10 billions).

“But beyond ayuta, none of these numbers has any vitality. Badva, indeed, occurs in the Aitarēya Brāhmaṇa, but it cannot there have any precise numerical sense ; and later on, the names of these high numerals are very much confused.

“An arithmetical progression of some interest is found in the Pancavimsa Brahmana, where occurs a list of sacrificial gifts in

*The Vedic Index here obviously refers to Aryans other than Indo-Aryans.

which, each successive figure doubles the amount of the preceding one. It begins with dvādaśa-mānam hiranyam: 'gold to the value of 12' (the unit being uncertain, but probably the *krśnala*) followed by 'to the value of 24, 48. 96, 192, 384, 768, 1536, 3072, then dve astāvimsati-sata-māne, which must mean $2 \times 128 \times 24$ (the last unit being not a single māna, but a number of 24 mānas) = 6,144, then 12,288; 24,576; 49,152; 98,304; 196,608; 393,216. With these large numbers may be compared the minute theoretical sub-division¹ of time found in the Satapata Brāhmaṇa, where a day is divided into 15 muhūrtas—1 muhūrta=15 kṣipras, 1 kṣipra=15 etarhis, 1 etarhi=15 idanis, 1 idani=15 prānas. The Sāṅkhāyana Srauta Sūtra has a decimal division of the day into 15 muhūrthas; 1 muhurta=10 nimesas, 1 nimesa=10 dhvamsis.

“There is no clear evidence that the Indians of the Vedic period had any knowledge of numerical figures, though it is perfectly possible.”

NOTE II TO CHAPTER X

“VEDIC MATHEMATICS”

Jagadguru Bhārati Krishna Tirtha, (the late Sankarachārya of Puri) has, in his posthumous work, *Vedic Mathematics* (or ‘*One Time Answers to All Mathematical Problems*’) expounded the sensational doctrine that the Upaveda of Atharva Vēda, viz. the Sthapathya Vēda (Architecture and Engineering), contains much mathematical lore, anticipating much of modern arithmetic by a few thousand years. According to the learned Swamiji, “The very word Veda has thus derivational meaning, i.e., the fountain-head and illimitable store-house of all knowledge, relating not only to the so-called spiritual matters but also those usually described as purely secular, temporal, or worldly”. He has discovered, by intuitive revelation, some hitherto unpublished Parisishtas (Appendices or Supplements) to the Atharvan, dealing with mathematics.* From these, he has extracted sixteen main sūtras (with some sub-sūtras) which throw an immense light on the knowledge of figures possessed by our ancients. The sūtras give a clue to what is known as “mental or instant mathematics”. As Dr. Agrawala says, in his Foreword to *Vedic Mathematics*, “Arithmetical problems usually solved by 11, 28 or 42 steps in the case of such vulgar fractions as $1/19$, $8/29$, $1/49$ are here solved in one simple line and this is possible to be done even by young boys”. And Swami P. Sarasvati adds,† “Whether or not the Vedas be believed as repositories of perfect wisdom, it is unquestionable that the Vedic race lived, not as mere pastoral folk possessing a half (or quarter) developed culture and civilisation. The Vedic seers were again, not mere naval-gazers or nose-tip gazers. They proved themselves adepts in all levels and branches of knowledge,

* Says Dr. C. K. Raja (Survey of Sanskrit Literature P:29), “We have lost the clue to untying the knots which alone have come to us. There are many ideas in the Rig Veda and the Atharvana that are connected with certain numbers and certain colours. We find only the mention of the numbers and the colours, without the bases for the ideas”.

† pp. 14/15 “*Vedic Mathematics*” — Nepal Rajya Sanskrit Series, Vol. 10.

theoretical and practical. The modern technician has his logarithmic tables and "mechanics" manual. The old Yāgnika had his sutras."

The sixteen aphorisms (or sutras), culled by the Jagatguru from the Atharva Veda, cover practically the whole field of mathematics. To cite the Svamiji's own words :

"The Sutras apply to, and cover, each and every part of, and each and every branch of, mathematics, including arithmetics ; algebra; geometry, whether plane or spherical; conics, (geometrical and analytical); astronomy; calculus, (differential and integral); etc. etc. In fact there is no part of mathematics, pure or applied, which is beyond their jurisdiction. In some very important and striking cases, sums requiring 30, 50, 100 or even more 'steps' of working (according to current Western methods) can be answered in a single and easy step of work by the Vedic method. As regards the time required by the students for mastering the whole course of Vedic mathematics, we need merely state from our actual experience, that 8 or 12 months, at an average rate of 2 or 3 hours per day, should suffice for completing the whole course of mathematical studies on these Vedic lines."—

The Western educated mathematicians might think that the claim made by the Jagatguru for Vedic mathematics is a large one ; but his all-too-brief treatise gives ample proof of the legitimacy of his claim. It is a pity that the Svamiji's unexpected passing away resulted in the loss of some more of his manuscripts ; but such results of his researches as have been published, establish beyond doubt the unique progress made by the Indo-Aryans in the realm of mathematics. As the saintly author points out, "The so-called Pythagorean theorem* was known to ancient Indians, long, long before the time of Pythagoras. There are several Vedic proofs (of this theorem), every one of which is much simpler than Euclids, which is ultra notorious for its tedious length and its clumsy-cumbrousness". The author gives no less than five (algebraical) proofs, based on these Vedic sutras, all immensely easier to understand than the conventional Euclidean demonstration. The same remarks apply to other classical

* Vedic Mathematics, P. 349 et seq.

theorems like those of Ptolemy or Apollonius ; the Āchārya gives an elegant 'Vedic' proof of the latter (based on Co-ordinate Geometry, "which was well known to the ancient Indian mathematicians and specifically finds a place in the Vedic sutras"). Then on to Analytical Conics, proceeds the Jagatguru and proves by examples that "through the Vedic method, by merely looking at the frightful-looking (but really harmless), Quadratic before us, we are able readily, by mere mental arithmetic, to write down an answer to the question, 'When does the general equation to a straight line represent two straight lines?'. Finally, the Vedic sutras deal, not merely with pure mathematical problems; they can tackle with ease abstruse questions relating to such matters as centre of gravity of hemispheres, dynamics, statics. hydrostatics, pneumatics, applied mechanics, astronomy (including the rotation of the planets and eclipses) etc. etc."

The Swamiji's discovery of the Vedic sūtras was the result of intense meditation, and perhaps of a little intuition. As is well-known, the Vedic language is kept cryptic and intentionally obscure on occasions, and consequently requires careful research to elicit its real meaning.* To give an instance, there is a post-Vedic sūtra which on its face reads as thus: "During King Kamsa's reign, rebellion, arson, confusion and famines prevailed." When decoded, this aphorism gave the fraction $1/17$ th in its complete decimal form, in one step.** The Jagatguru discovered the key and finally, extracted the sixteen sūtras which figure in his treatise, which sūtras have been described as "magical, astounding and epoch-making" by an expert reviewer of his work.† Western

* In later years, an Alphabetical Code language was evolved which yielded rich meanings to the initiated. For instance, there is a famous verse, in sloka metre, which gives three interpretations: one a praise of Lord Sankara; another of Sri Krishna; and the third (and the real one) which gives the value of π $\overline{3}$, to 32 decimal places.

** Aryabhata systematised Alphabetic Notation and used the consonants K to N (Ka to Na) to denote the numbers from 1 to 20. The consonants P to H (Pa to Ha) indicated 21, 22, 23 24, 25, 30, 40, 50, 60, 70, 80, 90, 100. The vowels indicated multiplications by powers of 100. (I: 10^2 U: 10^4 and so on). The notation could be used for expressing large numbers in a sort of mnemonic form.

* Prof. L. R. Srinivasan, in the 'Bhavan's Journal' (November 1965).

scholars naturally missed the real meaning of these and other sūtras in the Atharvan Parisishtas and called them a "meaningless jumble of words" and "infant humanity's prattle".* Even Colebrooke, who had such an insight into ancient Indian linguistics, was persuaded that those obscure aphorisms were just priestly hocus pocus, intended to augment the author's prestigious mystique.**

I give below a list of the sixteen Vedic sūtras and their corollaries, as extracted by the Swamiji.

<i>Sūtra</i>	<i>Sub-Sūtra</i>
1. Ēkadekēnapūrvēna	Anurūpyēna
2. Nikhilam Navatascarāḥ	Sishyatē Śēshasamgnāḥ
3. Ūrdhva Tiryakbhyām	Ādyam ādyēnāntya - mantyamā
4. Parāvarta yōjayēt	Kēvalai Saptakam gunyāt
5. Sūnyam Samayasamuccayē	Vēshatanam
6. Anurūpyāḥ Sūnyamanyāt	Yāvadūnam - Tāvadīnam
7. Sankalana Vyavakalanābhyām	Vargamcha yōjayēt
8. Purāna Puranābhyām	Antyayōrdasakēpi
9. Calana - Kalanābhyām	Antyayōrēva
10. Yāvadūnam	Samuccaya gunitah
11. Vyashtasamashtih	Lōpana sthapanābhyām
12. Śēshānyankēna cāramēna	Vilōkanam
13. Sōpantatvāya mantyam	Gunita muccayē
14. Yēkanyūnēna pūrvēna	Samuccaya gunitāḥ
15. Gunita muccayē	
16. Gunaka - Samuccayē	

I may, perhaps, end this Note with a few observations, relative to the opinion of H.T. Colebrooke, on Hindu algebra. When this learned Englishman published his researches (about 1820 A.D.), he did not have access to all the material now available to Indologists. For example, Colebrooke had no knowledge of the

‡ Profs. Whitney and Max Muller.

** Colebrooke even permits himself of a mild sneer at the Vedās. "They are too voluminous for a complete translation; what they contain would hardly reward the labour of the reader, much less of the translator"!

Atharvan 'Parisisthas', of the Bakshali MS., and of the various Arthasastras. He was, therefore, inclined, somewhat hastily, to dismiss Indian astronomy as crude, if not inaccurate, and practised by the pundits merely to serve the interests of astrology and "for the purposes of divination and a festal calendar". Modern research has proved the unsoundness of much of Colebrooke's criticism. In this context, it will be worthwhile to give some extracts of the writer's comments on Hindu Algebra, (vide his "Dissertation on the Algebra of the Hindus".)

"In the history of mathematical science, it has long been a question to whom the invention of Algebraic analysis is due, among what people, in what region, was it devised, by whom was it cultivated and promoted, or by whose labours was it reduced to form and system, and finally, from what quarter did the diffusion of its knowledge proceed? We are well assured, that the Arabs were mediately or immediately, our instructors in this study. But the Arabs themselves scarcely pretend to the discovery of Algebra; and this science in a more advanced state, subsisted among the Hindus prior to the earliest disclosure of it by the Arabians to modern Europe."

"Yet the remark may not seem inapposite, that had an earlier version of these treatises† been completed, had they been translated and given to the public when the notice of mathematicians was first drawn to the attainments of the Hindus in astronomy and in sciences connected with it, some addition would have been then made to the means and resources of Algebra for the general solution of problems by methods which have been re-invented, or have been perfected, in the last age." (i.e., 18th & 19th centuries A.D.)

"Admitting the Hindu and the Alexandrian authors to be nearly equally ancient, it must be conceded in favour of the Indian algebraist, that he was more advanced in the science; since he appears to have been in possession of the resolution of equations involving several unknown quantities, which it is not clear, nor

† The works of Aryabhata, Brahmagupta, Bhaskara etc.

fairly presumable, that Diophantus knew;* and a general method of indeterminate problems of at least the first degree, to a knowledge of which the Grecian algebraist had certainly not attained; though he displays infinite sagacity and ingenuity in particular solutions, and though a certain routine is discernible in them."

"As to the progress which the Hindus had made in the analytic art, it will be seen that they possessed well the arithmetic of surd roots; that they were aware of the infinite quotient resulting from the division of finite quantity by cipher; that they knew the general resolution of equations of the second degree, and had touched upon those of higher denominations, resolving them in the simplest cases, and in those, in which the solution happens to be practicable by the method which serves for quadratics; that they had attained a general solution of indeterminate problems of the first degree; that they had arrived at a method for deriving a multitude of solutions of answers to problems of the second degree from a single answer found tentatively, which is as near an approach to a general solution of such problems as was made until the days of Lagrange, who first demonstrated, that the problem, on which the solutions of all questions of this nature depend, is always resolvable in whole numbers. The Hindus had likewise attempted problems of this higher order by the application of the method which suffices for those of the first degree."

"They ‡ not only applied algebra both to astronomy and to geometry, but conversely applied geometry likewise to the demonstration of algebraic rules. In short, they cultivated algebra much more and with greater success, than geometry. In the whole science, he** is very far behind the Hindu writers, notwithstanding the infinite ingenuity by which he makes up for the want of rule."

"The points in which the Hindu algebra appears particularly distinguished from the Greek are, besides a better and more comprehensive algorithm,—1st: The management of equations involving more than one unknown term; (This adds to the two classes noticed by the Arabs, namely, simple and compound, two

* Regarding the Diophantus, referred to by Colebrooke as an Alexandrian Greek, subsequent research has revealed him to be an Asiatic and probably an Indian. (Deva Pantha ?)

** Diophantus. ‡ the Hindus.

or rather three, other classes of equation.) 2nd : the resolution of equations of a higher order, in which, if they achieved little, they had, at least, the merit of the attempt; and anticipated a modern discovery in the solution of biquadratics. 3rd : general methods for the solutions of indeterminate problems of first and second degrees, in which they went far indeed beyond Diophantus, and anticipated discoveries of modern algebraists. 4th: application of algebra to astronomical investigation and geometrical demonstration, in which also they hit upon some matters which have been re-invented in later times."

"It must then be admitted to be at least possible, if not probable, in the absence of direct evidence and positive proof, that the imperfect algebra of the Greeks, which had advanced in their hands no further than the solution of equations, involving one unknown term, as it was taught by Diophantus, was made known to the Hindus by their Grecian instructors in improved astronomy. But, by the ingenuity of the Hindu scholars, the mind was rendered fruitful, and the algebraic method was soon ripened from the slender beginning to the advanced state of a well-arranged science, as it was taught by Āryabhata, and as it is found in treatises compiled by Brahmagupta and Bhāskara, both of which versions are here presented to the public."

NOTE III TO CHAPTER X

The Sixty-four Arts, or Kalas, mentioned in ancient Hindu Literature.

A

A. Twentythree arts are derived from the Vedas, through the four Upavedas,

I. *Gāndharva Vēda* :

1. Nartana or dancing with appropriate gestures and foot movements.
2. Vādana, or playing on musical instruments.
3. The decoration of men and women by dress & ornaments.
4. The performance and knowledge of sundry mimicries and antics.
5. The laying out of beds and furniture and the weaving of garlands.
6. The entertainment of people by gambling and various tricks of magic.
7. The (knowledge of) different aspects of giving pleasure.

II *Āyur Vēda* :

8. The distillation of wines and spirituous liquors from flowers etc.
9. The extraction of thorns and the relieving of pain by operating on a vein.
10. The cooking of food by inter-mixtures of various tastes.
11. The planting, grafting, and preservation of plants.
12. The melting and powdering of stones and metals.
13. The art of using preparations from sugar-cane.
14. The knowledge of mixtures of metals and medicinal plants.
15. The knowledge of the analysis and synthesis of metals.
16. The preparation of new substances (alloys) out of metals, by combinations.
17. The preparation of salts.

III. *Dhanur Vēda*

18. The use and employment of weapons by proper arrangement of legs.
19. Duelling by various artifices.
20. The throwing of arms and implements towards some fixed point.
21. The formation of battle arrays, according to the signals given by musical instruments.
22. The arrangements of horses, elephants and chariots in war.

IV. *Sthapatya Vēda*

23. The propitiation of the gods by various seats and postures.

B

Other Arts :

24. The art of driving horses and elephants.
25. The art of teaching horses and elephants.
- (26-29) Cleansing, polishing, dyeing or rinsing, earthen things, wooden things, stones and metals.
30. Picture-drawing.
31. The construction of tanks, canals, parks and squares.
32. The construction of clocks, watches and musical instruments.
33. The dyeing (of cloth, wall-panels, etc.) by the application of inferior, middling, and superior colours.
34. Mechanical operations for putting down the action of water, air and fire.
35. The preparation of boats, chariots and conveyances.
36. The preparation of threads and ropes.
57. The weaving of fabrics by various kinds of threads.
38. The testing of gems as to whether they are good or bad, or as possessing marks, or holes.
39. The testing of gold and other metals.

40. The preparation of artificial gold and imitation jewels (culture-pearls were known in Ceylon, 2300 years ago).
 41. The making of ornaments with gold and silver.
 42. Enamelling.
 43. The softening of leathers.
 44. The flaying of skins from the bodies of dead beasts.
 45. Milking.
 46. Churning.
 47. Tailoring.
 48. Swimming and diving.
 49. Cleaning of domestic utensils.
 50. Washing of the human body with soaps, etc.
 51. Shaving.
 52. Extraction of oil from seeds and fats.
 53. Ploughing.
 54. Climbing mountains, etc.
 55. Flattering.
 56. The making of vessels, etc., with bamboo strips.
 57. The making of glass vessels.
 58. The pumping up, and withdrawing, of water.
 59. The preparation of tools and implements from iron.
 60. The preparation of saddles for horses, elephants, bulls and camels.
 61. The maintenance, entertainment, and nursing of children.
 62. Whipping of criminals according to sentence.
 63. Writing in different alphabets, and secret writing.
 64. Preparation of betel leaf, for chewing, etc.
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